2011

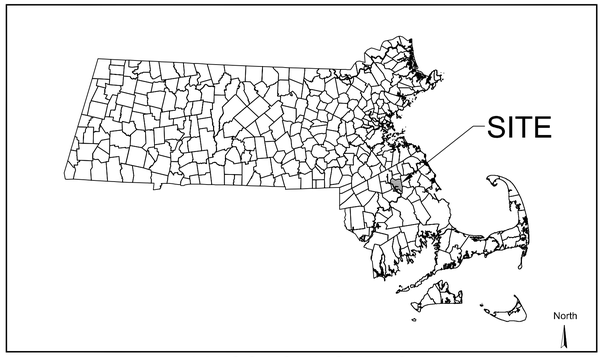
Final Report: Appendix H. LID Parking Lot Retrofit at Belmont Street Soccer Fields, East Bridgewater - Supporting Information

Horsley Witten Group, Inc.

APPENDIX H. LID PARKING LOT RETROFIT AT BELMONT STREET SOCCER FIELDS, EAST BRIDGEWATER - SUPPORTING INFORMATION

TAUNTON RIVER WATERSHED PLAN
EAST BRIDGEWATER YOUTH SOCCER FACILITY
DEMONSTRATION PROJECT
75% DESIGN PLANS

SEPTEMBER 10, 2010



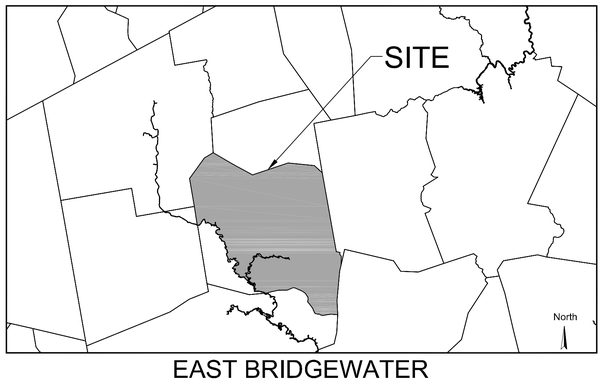
MASSACHUSETTS

Graphic Scale

0 150000

SCALE IN FEET

1:150000



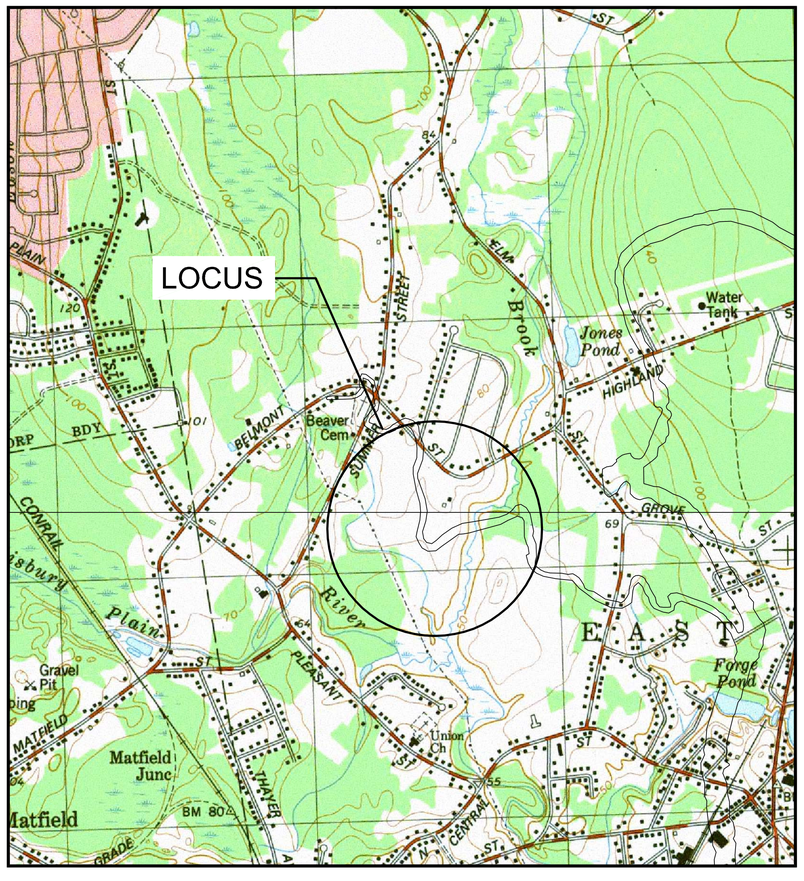
EAST BRIDGEWATER

Graphic Scale

0 12000

SCALE IN FEET

1:12000



VICINITY MAP

Graphic Scale

1-inch = 500-feet

Sheet List Table

Sheet Number	Sheet Title
1	COVER SHEET
2	CONSTRUCTION NOTES
3	EXISTING CONDITIONS
4	OVERALL SITE PLAN
5	GRADING AND DRAINAGE PLAN
6	DETAILED GRADING AND DRAINAGE PLAN
7	CONSTRUCTION DETAILS 1
8	CONSTRUCTION DETAILS 2

GENERAL NOTES:

1. THIS PLAN SET IS FOR PERMITTING ONLY AND NOT FOR CONSTRUCTION.
2. SURVEY CONDUCTED BY HORSLEY WITTEN GROUP ON MAY 6 AND 13 , 2010. ELEVATIONS ARE BASED ON AN ASSUMED DATUM .
3. PROPERTY LINES APPROXIMATE ONLY.
4. SITE INFORMATION:

   OWNER: TOWN OF EAST BRIDGEWATER
   ADDRESS: 415 BELMONT STREET
   MAP: 83
   LOT: 03

5. THE PROPERTY IS LOCATED WITHIN F.I.R.M. ZONE C AS SHOWN ON COMMUNITY PANEL NO. 250264 0005B DATED JULY 2, 1981.
6. THE WETLAND DELINEATION SHOWN HEREON WAS CONDUCTED BY HORSLEY WITTEN GROUP ON MAY 6, 2010.

Plan Set:

TAUNTON RIVER WATERSHED PLAN
EAST BRIDGEWATER YOUTH SOCCER FACILITY
DEMONSTRATION PROJECT
75% DESIGN PLANS

Prepared For:

Town of East Bridgewater
175 Central Street
East Bridgewater, MA 02333
1-508-378-1620

Prepared By:

Horsley Witten Group, Inc.
Sustainable Environmental Solutions
www.horsleywitten.com

370 Ives Street
Providence, RI 02906
(401) 272-1717 voice
(401) 439-8368 fax

Headquarters
90 Route 6A
Sandwich, MA 02563
(508 833-6600 voice
(508) 833-3150 fax

30 Green Street
Newburyport, MA 01950
(978) 499-0601 voice
(978) 499-0602 fax

Date Issued: SEPTEMBER 10, 2010

Registration: DRAFT NOT FOR CONSTRUCTION

Designed By: JEH

Drawn By: JEH

Checked By: RAC

Revisions

Rev.	Date	By	Appr.	Description
1				
2				
3				
4				
5				
6				
7				

Project Number: 8123

Sheet Number: 1 of 8

Drawing Number: C - 1

SURVEY NOTES

1. THE TOPOGRAPHY AND EXISTING SITE DETAIL DEPICTED HEREON WERE OBTAINED FROM AN INSTRUMENT SURVEY CONDUCTED ON THE GROUND BY THE HORSLEY WITTEN GROUP, INC.
2. THIS PLAN DOES NOT SHOW ANY RECORDED OR UNWRITTEN EASEMENTS WHICH MAY EXIST. HOWEVER, THIS DOES NOT CONSTITUTE A GUARANTEE THAT NO SUCH EASEMENTS EXIST.
3. EXISTING CONTOUR INTERVALS ARE EQUAL TO ONE FOOT.
4. THE ACCURACY OF MEASURED PIPE INVERTS AND PIPE SIZES IS SUBJECT TO FIELD CONDITIONS, THE ABILITY TO MAKE VISUAL OBSERVATIONS, DIRECT ACCESS TO THE VARIOUS ELEMENTS AND OTHER CONDITIONS.

GENERAL CONSTRUCTION NOTES

1. ALL SITE PREPARATION NECESSARY TO COMPLETE THIS PROJECT IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR.
2. ALL NECESSARY POLICE DETAIL SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR. CONTRACTOR SHALL COORDINATE WITH THE LOCAL POLICE DEPARTMENT.
3. THE CONTRACTOR SHALL MAKE ALL NECESSARY CONSTRUCTION NOTIFICATIONS AND APPLY FOR AND OBTAIN ALL NECESSARY CONSTRUCTION PERMITS, PAY ALL FEES INCLUDING POLICE DETAILS AND POST ALL BONDS, IF NECESSARY, ASSOCIATED WITH THE SAME, AND COORDINATE WITH THE OWNER AND THE ENGINEER.
4. ALL EXISTING CONDITIONS SHOWN SHALL BE CONSIDERED APPROXIMATE AND ARE BASED ON THE BEST INFORMATION AVAILABLE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING THAT THE PROPOSED IMPROVEMENTS SHOWN ON THE PLANS DO NOT CONFLICT WITH ANY KNOWN EXISTING OR OTHER PROPOSED IMPROVEMENTS. IF ANY CONFLICTS ARE DISCOVERED, THE CONTRACTOR SHALL NOTIFY THE OWNER AND THE ENGINEER PRIOR TO INSTALLING ANY PORTION OF THE SITE WORK WHICH WOULD BE AFFECTED.
5. THE CONTRACTOR IS SPECIFICALLY CAUTIONED THAT THE LOCATION AND/OR ELEVATION OF EXISTING UTILITIES AND STRUCTURES AS SHOWN ON THESE PLANS ARE BASED ON RECORDS OF VARIOUS UTILITY COMPANIES, AND WHEREVER POSSIBLE, MEASUREMENTS TAKEN IN THE FIELD. THIS INFORMATION IS NOT TO BE RELIED UPON AS BEING EXACT OR COMPLETE. THE LOCATION OF ALL UNDERGROUND UTILITIES AND STRUCTURES SHALL BE VERIFIED IN THE FIELD BY THE CONTRACTOR PRIOR TO THE START OF CONSTRUCTION. THE CONTRACTOR MUST CONTACT THE APPROPRIATE UTILITY COMPANY, ANY GOVERNING PERMITTING AUTHORITY IN THE TOWN OF EAST BRIDGEWATER, AND "DIGSAFE" (1-800-344-7233) AT LEAST 72 HOURS PRIOR TO ANY EXCAVATION WORK IN PREVIOUSLY UNALTERED AREAS TO REQUEST EXACT FIELD LOCATION OF UTILITIES. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO RESOLVE CONFLICTS BETWEEN THE PROPOSED UTILITIES AND FIELD-LOCATED UTILITIES AND SHALL REPORT ANY DISCREPANCIES TO THE ENGINEER IMMEDIATELY. THE ENGINEER ASSUMES NO RESPONSIBILITY FOR DAMAGES INCURRED AS A RESULT OF UTILITIES OMITTED, INCOMPLETELY OR INACCURATELY SHOWN. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING ACCURATE RECORDS OF THE LOCATION AND ELEVATION OF ALL WORK INSTALLED AND EXISTING UTILITIES FOUND DURING CONSTRUCTION FOR THE PREPARATION OF THE AS-BUILT PLAN.
6. THE CONTRACTOR IS RESPONSIBLE FOR MAINTAINING ALL EXISTING UTILITIES IN WORKING ORDER AND FREE FROM DAMAGE DURING THE ENTIRE DURATION OF THE PROJECT. ALL COST RELATED TO THE REPAIR OF UTILITIES SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR. EXCAVATION REQUIRED WITHIN THE PROXIMITY OF EXISTING UTILITY LINES SHALL BE DONE BY HAND. CONTRACTOR SHALL REPAIR ANY DAMAGE TO EXISTING UTILITY LINES OR STRUCTURES INCURRED DURING CONSTRUCTION OPERATIONS AT NO COST TO THE OWNER.
7. THE CONTRACTOR SHALL UTILIZE ALL PRECAUTIONS AND MEASURES TO ENSURE THE SAFETY OF THE PUBLIC, ALL PERSONNEL AND PROPERTY DURING CONSTRUCTION IN ACCORDANCE WITH OSHA STANDARDS, INCLUDING BARRICADES, SAFETY LIGHTING, CONES, POLICE DETAIL AND/OR FLAGMEN AS DETERMINED NECESSARY BY THE ENGINEER AND/OR TOWN OF EAST BRIDGEWATER. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE COST OF POLICE DETAIL AND FOR COORDINATING WITH THE LOCAL OR STATE POLICE DEPARTMENT FOR ALL REQUIRED POLICE DETAIL.
8. ALL TRENCHING WORK WITHIN A ROADWAY SHALL BE COORDINATED WITH THE PROPER LOCAL & STATE AGENCY. TRENCH SAFETY SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR INCLUDING ANY LOCAL AND/OR STATE PERMITS REQUIRED FOR THE TRENCHWORK. THIS WORK MAY BE REQUIRED TO TAKE PLACE OUTSIDE OF NORMAL HOURS OF OPERATION FOR THE FACILITY. THE CONTRACTOR SHALL PLAN ACCORDINGLY.
9. ALL TRENCH WORK WITHIN EXISTING PAVEMENT SHALL BE SAWCUT PER THE APPLICABLE DETAILS. TRENCHWORK BACKFILL AND COMPACTION SHALL HAVE MAX. 8-INCH LIFTS. CONTRACTOR SHALL BE REQUIRED TO REMOVE PATCH AND REPAVE AFTER ONE COMPLETE 12-MONTH CYCLE IF SETTLEMENT OCCURS DUE TO INADEQUATE COMPACTION AS DETERMINED BY THE ENGINEER WITHIN THE WARRANTY PERIOD.
10. THE CONTRACTOR SHALL MAKE ALL CONNECTION ARRANGEMENTS WITH UTILITY COMPANIES, AS REQUIRED.
11. ALL IMPORTED MATERIAL SHALL BE CLEAN, NO MATERIAL WILL BE ACCEPTED FROM AN EXISTING OR FORMER 21E SITE AS DEFINED BY THE MASSACHUSETTS CONTINGENCY PLAN 310 CMR 40.0000.
12. SITE LAYOUT SURVEY REQUIRED FOR CONSTRUCTION WILL BE PROVIDED BY THE CONTRACTOR AND SHALL BE CONDUCTED BY A MASSACHUSETTS' REGISTERED PROFESSIONAL LAND SURVEYOR. THE CONTRACTOR IS RESPONSIBLE FOR COORDINATING WITH THE SURVEYOR FOR ALL SITE SURVEY WORK.
13. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ESTABLISHING AND MAINTAINING ALL CONTROL POINTS AND BENCHMARKS DURING CONSTRUCTION INCLUDING BENCHMARK LOCATIONS AND ELEVATIONS AT CRITICAL AREAS. THE LOCATION OF ALL CONTROL POINTS AND BENCHMARKS SHALL BE COORDINATED WITH THE ENGINEER.
14. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING ALL GRADE STAKES SET BY THE SURVEYOR. GRADE STAKES SHALL REMAIN UNTIL A FINAL INSPECTION OF THE ITEM HAS BEEN COMPLETED BY THE ENGINEER. ANY RE-STAKING OF PREVIOUSLY SURVEYED SITE FEATURES SHALL BE THE RESPONSIBILITY (INCLUDING COST) OF THE CONTRACTOR.
15. UNLESS OTHERWISE SPECIFIED ON THE PLANS AND DETAILS/SPECIFICATIONS, ALL SITE CONSTRUCTION MATERIALS AND METHODOLOGIES ARE TO CONFORM TO THE MOST RECENT VERSION OF THE MASSACHUSETTS HIGHWAY DEPARTMENT STANDARD SPECIFICATIONS (THE MASSACHUSETTS HIGHWAY DEPARTMENT 1988 STANDARD SPECIFICATIONS FOR HIGHWAYS AND BRIDGES, THE 2002 SUPPLEMENTAL SPECIFICATIONS, AND THE 2005 STANDARD SPECIAL PROVISIONS).
16. CONSTRUCTION SHALL BE PERFORMED IN ACCORDANCE WITH APPLICABLE LAWS AND REGULATIONS REGARDING NOISE, VIBRATION, DUST, SEDIMENTATION CONTAINMENT, AND TRENCH WORK.
17. SOLID WASTES SHALL BE COLLECTED AND STORED IN A SECURED DUMPSTER. THE DUMPSTER SHALL MEET ALL LOCAL AND STATE SOLID WASTE MANAGEMENT REGULATIONS.
18. THE CONTRACTOR SHALL RESTORE ALL SURFACES EQUAL TO THEIR ORIGINAL CONDITION AFTER CONSTRUCTION IS COMPLETE. AREAS NOT DISTURBED BY CONSTRUCTION SHALL BE LEFT NATURAL. THE CONTRACTOR SHALL TAKE CARE TO PREVENT DAMAGE TO SHRUBS, TREES, OTHER LANDSCAPING AND/OR NATURAL FEATURES. WHEREAS THE PLANS DO NOT SHOW ALL LANDSCAPE FEATURES, EXISTING CONDITIONS MUST BE VERIFIED BY THE CONTRACTOR IN ADVANCE OF THE WORK.
19. ALL UNPAVED AREAS DISTURBED BY THE WORK SHALL HAVE A MINIMUM OF 4-INCHES OF LOAM INSTALLED AND BE SEEDED WITH GRASS SEED AS SHOWN ON THE PLAN AND/OR DIRECTED BY THE ENGINEER. THE CONTRACTOR SHALL BE RESPONSIBLE FOR WATERING ANY LOAM AND SEEDED AREAS UNTIL LAWN GROWTH IS ESTABLISHED AND APPROVED BY THE ENGINEER AND/OR OWNER.
20. ALL PROPOSED STRUCTURES SHALL BE DESIGNED BY THEIR MANUFACTURERS FOR AASHTO H-20 LOADING. PRECAST CONCRETE SHALL HAVE A MINIMUM 28-DAY STRENGTH OF 4000 PSI UNLESS OTHERWISE NOTED HEREIN.
21. A HIGH WATER TABLE IS ANTICIPATED. IF THE WATER TABLE IS ENCOUNTERED DURING EXCAVATION, THE WATER TABLE SHALL BE TEMPORARILY LOWERED BY PUMPING. THE CONTRACTOR SHALL INSTALL A DEWATERING BASIN AND PROVIDE A DEWATERING PLAN DEPICTING PROPOSED DEWATERING LOCATION. THE PUMP DISCHARGE SHALL BE DIRECTED TO THIS BASIN TO PREVENT SEDIMENTS FROM LEAVING THE CONSTRUCTION AREA. THE CONTRACTOR SHALL INSTALL ADDITIONAL BASINS IF REQUIRED. INSTALL THE BASIN AS SHOWN ON THE SITE PLAN IF SO NOTED, OTHERWISE INSTALL THE BASIN(S) WITHIN THE LIMIT OF DISTURBANCE AS SHOWN BY THE SILT FENCE OR STRAWBALES (SEE DETAIL SHEET).
22. LEDGE OR BOULDER EXCAVATION IS NOT ANTICIPATED FOR THIS SITE. HOWEVER, THE CONTRACTOR SHALL PROVIDE A UNIT PRICE COST IN CUBIC YARD MEASURE FOR LEDGE AND/OR BOULDER REMOVAL. LEDGE AND/OR BOULDERS LESS THAN 1 CUBIC YARD IN SIZE BASED ON THE AVERAGE DIMENSIONS WILL NOT BE CONSIDERED PAYABLE ROCK. UNIT PRICE SHALL BE GIVEN FOR BOTH ON AND OFF SITE DISPOSAL. COST OF REPLACEMENT MATERIAL SHALL BE INCLUDED IF ADDITIONAL FILL MATERIAL IS REQUIRED.
23. THE CONTRACTOR SHALL REGULARLY INSPECT THE PERIMETER OF THE PROPERTY TO CLEAN UP AND REMOVE LOOSE CONSTRUCTION DEBRIS BEFORE IT LEAVES THE SITE. ALL DEMOLITION DEBRIS SHALL BE PROMPTLY REMOVED FROM THE SITE TO AN APPROVED DUMP SITE. ALL TRUCKS LEAVING THE SITE SHALL BE COVERED.
24. CONCRETE TRUCKS SHALL NOT BE WASHED ONSITE. ANY CEMENT OR CONCRETE DEBRIS LEFT IN THE DISTURBED AREA SHALL BE REMOVED BY HAND AT THE CONTRACTOR'S EXPENSE.
25. BURIAL OF ANY STUMPS, SOLID DEBRIS, AND/OR STONES/BOULDERS ONSITE IS PROHIBITED. NO ROAD SALT OR OTHER DE-ICING CHEMICALS SHALL BE USED ON THE ACCESS ROADWAY.
26. IF ANY DEVIATION OR ALTERATION OF THE WORK PROPOSED ON THESE DRAWINGS IS REQUIRED, THE CONTRACTOR IS TO IMMEDIATELY CONTACT AND COORDINATE WITH THE ENGINEER AND OWNER.
27. AT THE END OF CONSTRUCTION, THE CONTRACTOR SHALL REMOVE ALL CONSTRUCTION DEBRIS AND SURPLUS MATERIALS FROM THE SITE. A THOROUGH INSPECTION OF THE WORK PERIMETER IS TO BE MADE AND ALL DISCARDED MATERIALS, BLOWN OR WATER CARRIED DEBRIS, SHALL BE COLLECTED, AND REMOVED FROM THE SITE.

BASIC CONSTRUCTION SEQUENCE

1. SURVEY AND STAKE THE PROPOSED LIMIT OF DISTURBANCE AND LIMIT OF SEDIMENTATION BARRIERS.
2. PLACE SEDIMENTATION BARRIERS (STRAWBALES, SILT FENCE, ETC.) AS SHOWN ON THE PLANS AND STAKED OUT IN THE FIELD. IN NO CASE IS THE LIMIT OF WORK TO EXTEND BEYOND THE SEDIMENTATION BARRIERS/LIMIT OF DISTURBANCE AS SHOWN ON THE PROJECT PLANS.
3. INSTALL TEMPORARY CONSTRUCTION ENTRANCES IN LOCATIONS SHOWN ON PLANS. NO OTHER ENTRANCES SHALL BE USED TO GAIN ACCESS TO THE SITE BY ANY CONSTRUCTION OR DELIVERY VEHICLES.
4. BEGIN CLEARING THE SITE AS REQUIRED.
5. SURVEY AND STAKE CENTERLINE OF THE PROPOSED ROADS, DRAINAGE BASINS, AND DRAINAGE LINES.
6. EXCAVATE AND ROUGH GRADE THE PROPOSED DRAINAGE BASINS AND ANY ADDITIONAL TEMPORARY BASINS NECESSARY TO CONTROL SITE RUNOFF AND SEDIMENTS. PERMANENT DRAINAGE BASINS SHALL BE TEMPORARILY SEEDED. PERMANENT DRAINAGE BASIN SEEDING AND PLANTING SHALL BE COMPLETED AFTER THE CONTRIBUTING AREA TO THE BASIN HAS REACHED A MINIMUM OF 80% STABILIZATION AND IS NO LONGER REQUIRED TO BE USED AS A CONSTRUCTION SEDIMENTATION BASIN.
7. TOPSOIL AND EXISTING GRAVEL ARE TO BE STRIPPED FROM THE AREA OF THE PROPOSED ROADWAYS AND DRAINAGE BASINS AND STOCKPILED IN APPROVED LOCATIONS. TOPSOIL AND GRAVEL STOCKPILES ARE TO BE PROTECTED BY A SEDIMENT BARRIER.
8. INSTALL TEMPORARY CONVEYANCE DEVICES (SWALES, CHECK DAMS, PIPES, ETC.) AS NECESSARY TO CONVEY RUNOFF TO TREATMENT AREAS.
9. BEGIN ROUGH GRADING AREAS FOR ROADS, PARKING. BRING ROUGH GRADING TO PROPER ELEVATIONS AS SOON AS PRACTICABLE. WORK SHALL PROGRESS DILIGENTLY TO MINIMIZE TIME SOILS ARE UN-STABILIZED.
10. INSTALL DRAINAGE PIPES AND DRAINAGE STRUCTURES. WORK SHALL BEGIN AT THE DRAINAGE BASINS AND PROGRESS UP-GRADIENT. PROTECT DISCHARGE OUTLETS WITH RIP-RAP APRONS. THE DRAINAGE BASIN(S) AND DRAINAGE NETWORK ARE TO BE PROTECTED FROM SEDIMENTATION WITH SILT FENCE AND STRAWBALES UNTIL ALL UN-STABILIZED AREAS ARE STABILIZED WITH STONE SUB-BASE OR VEGETATION. INSTALL SEDIMENT BARRIERS AT ALL POINTS OF ENTRY INTO THE DRAINAGE NETWORK.
11. PERMANENTLY SEED ALL DISTURBED AREAS OUTSIDE OF THE AREA TO BE PAVED.
12. PLACE COMPACTED GRAVEL FOUNDATION AND ROUGH GRADE THE ROADWAYS/PARKING AREAS IN ACCORDANCE WITH THE SITE PLANS AND IN ACCORDANCE WITH APPLICABLE STATE AND LOCAL REGULATIONS AS SOON AS POSSIBLE.
13. FINISH PERMANENT STABILIZATION. SWEEP THE ROADWAY TO REMOVE ALL SEDIMENTS. REPAIR DRAINAGE OUTLETS AND BASINS AS REQUIRED. THE CONTRACTOR SHALL CLEAN AND FLUSH THE DRAINAGE STRUCTURES AND PIPES AT THE END OF CONSTRUCTION AND ALL ACCUMULATED SEDIMENTS IN THE DRAINAGE BASINS SHALL BE REMOVED. CONTRACTOR SHALL INSPECT THE DRAINAGE NETWORK AND REPAIR ANY DAMAGE IMMEDIATELY.
14. COMPLETE ALL REMAINING PLANTING AND SEEDING.
15. REMOVAL OF ALL TEMPORARY SOIL EROSION AND SEDIMENTATION CONTROL MEASURES FOLLOWING VEGETATIVE ESTABLISHMENT OF ALL DISTURBED AREAS SHALL BE APPROVED BY THE ENGINEER AND WHEN THE CONTRIBUTING AREA HAS REACHED A MINIMUM OF 80% STABILIZATION.

GENERAL DEMOLITION NOTES

THIS PLAN SET DOES NOT INCLUDE DETAILS & SPECIFICATIONS FOR ALL DEMOLITION WORK REQUIRED WITHIN THE PROPOSED CONSTRUCTION LIMITS. IT IS THE CONTRACTOR'S RESPONSIBILITY TO COORDINATE WITH THE OWNER, PROJECT ARCHITECT, MECHANICAL ENGINEERS AND OTHER PROJECT ENGINEERS INVOLVED WITH THE PROPOSED NEW CONSTRUCTION TO DEVELOP A SUITABLE DEMOLITION PLAN, WHICH WILL ALLOW THE FACILITIES TO REMAIN IN OPERATION DURING THE ENTIRETY OF CONSTRUCTION.

1. UNLESS OTHERWISE NOTED, THE CONTRACTOR IS RESPONSIBLE FOR THE RELOCATION, DEMOLITION, REMOVAL AND DISPOSAL, IN A LOCATION APPROVED BY ALL GOVERNING AUTHORITIES, OF ALL EXISTING SITE ELEMENTS AND STRUCTURES INCLUDING, BUT NOT LIMITED TO, BUILDINGS, ROADWAYS, PARKING AREAS, PARKING ISLANDS, BITUMINOUS CONCRETE, CEMENT CONCRETE, GRAVEL, CURBS, WALKWAYS, SIDEWALKS, BERMS, FENCES, BOLLARDS, POSTS, PLANTING BEDS, TREES, SHRUBS, UTILITIES, DRAINAGE STRUCTURES AND ALL OTHER STRUCTURES SHOWN AND NOT SHOWN WITHIN CONSTRUCTION LIMITS, AND WHERE NEEDED, TO ALLOW FOR NEW CONSTRUCTION. ALL FACILITIES TO BE REMOVED SHALL BE UNDERCUT TO SUITABLE MATERIAL AND BROUGHT TO GRADE WITH SUITABLE COMPACTED FILL MATERIAL PER SPECIFICATIONS.
2. THE CONTRACTOR IS RESPONSIBLE FOR REMOVING ALL DEBRIS FROM THE SITE AND DISPOSING OF THE DEBRIS IN A PROPER AND LEGAL MANNER. THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING ALL PERMITS REQUIRED FOR DEMOLITION AND DISPOSAL.
3. THE CONTRACTOR SHALL COORDINATE WITH RESPECTIVE UTILITY COMPANIES PRIOR TO THE REMOVAL AND/OR RELOCATION OF UTILITIES. THE CONTRACTOR SHALL COORDINATE WITH THE UTILITY COMPANIES CONCERNING PORTIONS OF THE WORK WHICH MAY BE PERFORMED BY THE UTILITY COMPANY AND ANY FEES WHICH ARE TO BE PAID TO THE UTILITY COMPANY FOR THEIR SERVICES. THE CONTRACTOR IS RESPONSIBLE FOR PAYING ALL FEES AND CHARGES.
4. THE CONTRACTOR SHALL REFER TO MECHANICAL AND UTILITY PLANS AND SPECIFICATIONS FOR ALL WORK WHICH REQUIRES UTILITIES TO BE REMOVED, RELOCATE OR ABANDONED AND LEFT IN PLACE.
5. THE CONTRACTOR IS TO PROVIDE NOTICE TO ALL UTILITY COMPANIES REGARDING DESTRUCTION AND REMOVAL OF ALL SERVICE LINES AND CAP ALL UTILITY LINES, AS REQUIRED, BEFORE PROCEEDING WITH THE WORK.
6. THE CONTRACTOR SHALL MAINTAIN CONTINUOUS ACCESS AND OPERATION FOR SURROUNDING FACILITIES, AS DEEMED BY THE OWNER, AT ALL TIMES DURING DEMOLITION OF THE EXISTING FACILITIES.
7. PRIOR TO DEMOLITION OCCURRING, ALL EROSION CONTROL DEVICES ARE TO BE INSTALLED.

GENERAL GRADING AND DRAINAGE NOTES

1. ALL CUT AND FILL SLOPES SHALL BE 3:1 OR FLATTER UNLESS OTHERWISE NOTED.
2. EXISTING GRADE CONTOUR INTERVALS SHOWN AT 1 FOOT.
3. PROPOSED GRADE CONTOUR INTERVALS SHOWN AT 1 FOOT.
4. CONTRACTOR SHALL ADJUST AND/OR CUT EXISTING PAVEMENT AS NECESSARY TO ASSURE A SMOOTH FIT AND CONTINUOUS GRADE.
5. CONTRACTOR SHALL ASSURE POSITIVE DRAINAGE AWAY FROM BUILDINGS FOR ALL NATURAL AND PAVED AREAS.
6. PROPOSED ELEVATIONS ARE SHOWN TO FINISH PAVEMENT OR GRADE UNLESS NOTED OTHERWISE.
7. ALL EARTHWORK AND SITE PREPARATION SHALL BE DONE IN STRICT ACCORDANCE WITH THE RECOMMENDATIONS OF ANY SUBSURFACE INVESTIGATION OR GEOTECHNICAL REPORTS PREPARED FOR THIS SITE.
8. DRAINAGE PIPING SHALL BE HIGH DENSITY POLYETHYLENE PIPE AND CONFORM TO AASHTO M294 CORRUGATED POLYETHYLENE PIPE. PIPE SHALL BE INSTALLED AT THE LOCATIONS INDICATED ON THE PLAN. MINIMUM CLEARANCE BETWEEN PROPOSED DRAINAGE PIPING AND OTHER UTILITIES/STRUCTURES SHALL BE 18" VERTICALLY AND 4-FT HORIZONTALLY. CPP SHALL BE CAREFULLY BACKFILLED IN ACCORDANCE WITH THE LATEST MASSACHUSETTS HIGHWAY DEPARTMENT STANDARD SPECIFICATIONS. THE MINIMUM COVER FOR HDPE PIPE IS 1'-0" FOR H-20 TRAFFIC LOADS IF INSTALLED IN ACCORDANCE WITH AASHTO SECTION 30. THIS IS BASED ON EMPIRICAL CALCULATION OF LOAD RESPONSE, MANUFACTURER'S TESTING AND FIELD EXPERIENCE WITH THE PIPE. AASHTO SPECIFICATIONS SECTION 18.4.1.5 DEFINES THE MINIMUM COVER AS "D/8 BUT NOT LESS THAN 12 INCHES." THIS COVER IS MEASURED FROM THE PIPE OD TO THE TOP OF A RIGID (CONCRETE) PAVEMENT OR THE BOTTOM OF A FLEXIBLE (BITUMINOUS) PAVEMENT. BOTH AASHTO AND ASTM, AS WELL AS MOST MANUFACTURERS, REQUIRE ADDITIONAL (TEMPORARY) COVER FOR CONSTRUCTION LOADS GREATER THAN H-20. GENERALLY, AN ADDITIONAL 2' OF TEMPORARY COVER, MOUNDED OVER THE PIPE AND REMOVED FOR FINAL GRADING AND PAVING, IS SUFFICIENT FOR LARGE CONSTRUCTION VEHICLE LOADS.
9. BACKFILL ADJACENT TO PIPES AND STRUCTURES SHALL BE OF THE TYPE AND QUALITY CONFORMING TO THAT SPECIFIED FOR THE ADJOINING FILL MATERIAL. BACKFILL SHALL BE PLACED IN HORIZONTAL LAYERS NOT TO EXCEED SIX INCHES IN THICKNESS AND COMPACTED TO A DENSITY OF 95% OF MAXIMUM DRY DENSITY WITH A MOISTURE CONTENT WITHIN +/- 2% OF OPTIMUM. ALL COMPACTION IS TO BE DETERMINED BY AASHTO METHOD T-99. TESTING OF BACKFILL MATERIAL SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.

STORMWATER FACILITY OPERATION & MAINTENANCE:

1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROPER INSPECTION AND MAINTENANCE OF ALL STORMWATER MANAGEMENT FACILITIES UNTIL SUCH TIME THAT THE ROADWAYS AND ASSOCIATED UTILITIES ARE ACCEPTED BY THE OWNER AND THE ENGINEER.
2. THE CONTRACTOR SHALL INSPECT AND RESTORE/CLEAN ALL FACILITIES (INLETS, MANHOLES, INFILTRATION BASINS, ETC.) OF SEDIMENT AND DEBRIS PRIOR TO THE OWNER'S ACCEPTANCE.
3. ALL SEDIMENT AND DEBRIS SHALL BE DISPOSED OF PROPERLY IN A PRE-APPROVED LOCATION AS APPROVED BY THE TOWN OF EAST BRIDGEWATER.
4. THE CONTRACTOR SHOULD REFER TO THE STORMWATER POLLUTION PREVENTION PLAN (SWPPP) FOR ADDITIONAL INFORMATION PERTAINING TO STORMWATER FACILITY OPERATION AND MAINTENANCE REQUIREMENTS AND SHALL MAINTAIN A WORKING COPY ON SITE AT ALL TIMES.
5. ALL STORMWATER FACILITIES SHALL BE INSPECTED BY THE CONTRACTOR AFTER EVERY MAJOR RAINFALL EVENT FOR THE ENTIRE DURATION OF THE CONSTRUCTION PROJECT AND THE FIRST 3 MONTHS AFTER CONSTRUCTION TO ENSURE PROPER STABILIZATION AND CONSTRUCTION.
6. SPECIFIC ANNUAL MAINTENANCE SHALL BE AS FOLLOWS:
   - A. DRAINAGE STRUCTURES (INLETS): ALL DRAINAGE STRUCTURES WILL BE INSPECTED ANNUALLY TO MONITOR FOR PROPER OPERATION, COLLECTION OF LITTER OR TRASH, AND STRUCTURAL DETERIORATION. THE BASINS WILL BE CLEANED OF SEDIMENT (INCLUDING SUMPS) AS NECESSARY, AND REPAIRED WHEN REQUIRED.
   - B. RIP-RAP SLOPE PROTECTION: RIP RAP AT THE OUTFALLS WILL BE INSPECTED ANNUALLY AND REPAIRED AS NECESSARY.
   - C. SEDIMENT FOREBAY: THE SEDIMENT FOREBAY(S) WILL BE INSPECTED ANNUALLY TO ENSURE PROPER FUNCTIONING. THE SEDIMENT BUILD-UP ON THE FLOOR OF THE FOREBAY WILL BE REMOVED AND PROPERLY DISPOSED OF APPROXIMATELY ONCE EVERY FIVE TO SEVEN YEARS, OR MORE OFTEN AS NECESSARY TO LIMIT SEDIMENT BUILDUP TO LESS THAN 50 PERCENT OF THE DESIGN VOLUME.
   - D. GRASS SWALES: A GENERAL INSPECTION OF THE SWALE SHALL BE CONDUCTED ANNUALLY AND AFTER STORM EVENTS GREATER THAN OR EQUAL TO THE 1-YEAR, 24-HOUR PRECIPITATION EVENT, OR MORE FREQUENTLY AS NEEDED. THE WORK CONSISTS OF REMOVAL OF ANY TRASH AND/OR DEBRIS FROM THE BOTTOM OF THE SWALE, REMOVAL OF SEDIMENT WITHIN THE SWALE WHEN BUILDUP IS GREATER THAN OR EQUAL 1/4 OF THE DESIGN DEPTH, MOWING OF THE GRASS AT LEAST FOUR TIMES A YEAR TO A HEIGHT OF 4-6 INCHES DURING THE GROWING SEASON, CORRECTING ANY EROSION GULLYING, AND RESEEDING AS NECESSARY. SEDIMENT SHALL BE DISPOSED OF OFF-SITE IN A PRE-APPROVED LOCATION.
   - E. CONSTRUCTED WETLAND SYSTEM: THE CONSTRUCTED WETLAND SYSTEM WILL BE INSPECTED SEMI-ANNUALLY FOR THE FIRST YEAR OF OPERATION AND ANNUALLY AFTER THE FIRST YEAR, AND AFTER STORM EVENTS GREATER THAN OR EQUAL TO THE 1-YEAR, 24-HOUR PRECIPITATION EVENT. GENERAL MAINTENANCE OF WETLAND SYSTEM FALLS UNDER LANDSCAPING PRACTICES. THE PLANTING SOIL BED WILL BE MONITORED FOR PROPER PH, EROSION, AND AERATION. MULCH (IF APPLICABLE) WILL BE REPLACED EVERY TWO YEARS, AND ILL-ESTABLISHED, DEAD OR SEVERELY DISEASED PLANTS WILL BE REMOVED AND REPLACED ANNUALLY. SEDIMENT AND/OR ORGANIC MATTER BUILD-UP ON THE WETLAND SURFACE WILL BE REMOVED AS NEEDED.
   - F. ROUTINE MAINTENANCE: OTHER ROUTINE MAINTENANCE WILL INCLUDE REMOVAL OF TRASH AND LITTER FROM PAVED AND PERIMETER AREAS, AND ANNUAL STREET AND PARKING LOT SWEEPING AFTER THE SPRING THAW TO AVOID EXCESSIVE ACCUMULATION OF SEDIMENT IN THE DRAINAGE SYSTEM. THE PIPES DRAINING THE PROJECT WILL BE INSPECTED ANNUALLY FOR PROPER FLOW.

NOTE: OPERATION AND MAINTENANCE CHECKLIST AVAILABLE UPON REQUEST

EROSION & SEDIMENT CONTROL NOTES

1. PRIOR TO THE START OF CONSTRUCTION A NOTICE OF INTENT (NOI) MUST BE FILED WITH NPDES. THE CONTRACTOR SHOULD REFER TO THE STORMWATER AND POLLUTION PREVENTION PLAN (SWPPP) REGARDING ALL EROSION CONTROL MATTERS AND SHALL MAINTAIN A WORKING COPY ONSITE AT ALL TIMES. THE CONTRACTOR SHALL FOLLOW THE SWPPP PROTOCOL FOR SITE MAINTENANCE, INSPECTIONS AND PROPER DOCUMENTATION UNTIL THE SITE HAS BEEN ACCEPTED BY THE OWNER. AT THE COMPLETION OF THE PROJECT A NOTICE OF TERMINATION WILL NEED TO BE FILED BY THE CONTRACTOR OR OWNER WITH NPDES. IN ACCORDANCE WITH NPDES REGULATIONS THE COMPLETED SWPPP, WHICH SHALL INCLUDE ALL OF THE SITE EROSION CONTROL DOCUMENTATION, WEEKLY EROSION INSPECTION REPORTS COMPLETED BY THE DESIGNATED SITE PERSONNEL, AND ANY OTHER PERTINENT SITE DOCUMENTATION MUST BE RETAINED FOR A MINIMUM OF 3 YEARS FROM THE DATE OF TERMINATION.
2. THE SITE CONSTRUCTION FOREMAN SHALL BE DESIGNATED AS THE ON-SITE PERSONNEL RESPONSIBLE FOR THE DAILY INSPECTION AND MAINTENANCE OF ALL SEDIMENT AND EROSION CONTROLS AND SHALL IMPLEMENT ALL NECESSARY MEASURES TO CONTROL EROSION AND PREVENT SEDIMENT FROM LEAVING THE SITE.
3. THE CONTRACTOR SHALL INSTALL ALL SEDIMENT AND EROSION CONTROL MEASURES AS SHOWN ON THE DESIGN PLANS IN CONSULTATION WITH THE CONSERVATION AGENT, AND AS DETERMINED NECESSARY IN THE FIELD BY THE ENGINEER BEFORE **ANY CONSTRUCTION ACTIVITIES** ARE TO BEGIN. THESE MEASURES SHALL BE CHECKED, MAINTAINED/REPLACED AS NECESSARY DURING THE ENTIRE CONSTRUCTION PERIOD OF THE PROJECT. SUCH MEASURES SHALL REPRESENT THE LIMIT OF WORK. WORKERS SHALL BE INFORMED THAT NO CONSTRUCTION ACTIVITY IS TO OCCUR BEYOND THE LIMIT OF WORK AT ANY TIME THROUGH THE CONSTRUCTION PERIOD.
4. A MINIMUM SURPLUS OF 100-FEET OF EROSION CONTROL BARRIER (SILT FENCE, STRAWBALE, &/OR SILT SOCK) SHALL BE STOCKPILED ONSITE AT ALL TIMES.
5. THE CONTRACTOR SHALL PROTECT THE ADJACENT RESOURCE AREA FROM SEDIMENTATION DURING PROJECT CONSTRUCTION UNTIL ACCEPTANCE BY THE OWNER & IN CONFORMANCE WITH THE ORDER OF CONDITIONS.
6. A CONSTRUCTION EXIT SHALL BE CONSTRUCTED AS SHOWN IN THE DETAILS TO SHED DIRT FROM CONSTRUCTION VEHICLE TIRES. THE CRUSHED STONE PAD WILL BE REPLACED/CLEANED AS NEEDED TO MAINTAIN ITS EFFECTIVENESS.
7. THE LIMIT OF ALL CLEARING, GRADING AND DISTURBANCES SHALL BE KEPT TO A MINIMUM WITHIN THE PROPOSED AREA OF CONSTRUCTION. THE CONTRACTOR SHALL PHASE THE SITE WORK IN A MANNER TO MINIMIZE AREAS OF EXPOSED SOIL. IF TREES ARE TO BE CUT ON THE ENTIRE SITE, ONLY THOSE AREAS WHICH ARE ACTIVELY UNDER CONSTRUCTION SHALL BE GRUBBED. THE REQUIRED SEDIMENTATION CONTROL FACILITIES MUST BE PROPERLY ESTABLISHED, CLEARLY VISIBLE AND IN OPERATION PRIOR TO INITIATING ANY LAND CLEARING ACTIVITY AND/OR OTHER CONSTRUCTION RELATED WORK.
8. IT IS THE CONTRACTOR'S RESPONSIBILITY TO MONITOR LOCAL WEATHER REPORTS DURING CONSTRUCTION AND PRIOR TO SCHEDULING EARTHMOVING OR OTHER CONSTRUCTION ACTIVITIES WHICH WILL LEAVE LARGE DISTURBED AREAS UNSTABILIZED. IF INCLEMENT WEATHER IS PREDICTED, THE CONTRACTOR SHALL USE THEIR BEST PROFESSIONAL JUDGEMENT WHEN SCHEDULING CONSTRUCTION ACTIVITIES AND SHALL BE RESPONSIBLE FOR INSURING THE NECESSARY EROSION CONTROL DEVICES ARE INSTALLED AND FUNCTIONING PROPERLY TO MINIMIZE EROSION FROM ANY IMPENDING WEATHER EVENTS.
9. SOIL EROSION AND SEDIMENTATION CONTROL MEASURES SHALL

SOCCER FIELD

MAHW 6
MAHW 5
MAHW 3
MAHW 2
MAHW 1

TP-9
APPROXIMATE LEACH AREA

200-FT RIVERFRONT AREA

UP1536
UP1537
UP1538
UP1535
UP1534
UP1533
UP1532
UP1531

IRR. BOX
ABANDONED CATCHBASIN
EXISTING 1,000 GALLON PUMP CHAMBER
EXISTING 3,500 GALLON SEPTIC TANK
EXISTING 1,000 GALLON GREASE TRAP
TP-1
DECK
DECK

SOIL BORING #2
ESHGW=18" BELOW GRADE

SOIL BORING #1
ESHGW=19" BELOW GRADE

BENCHMARK
SPK SET
EL.=74.33

BENCHMARK
STK/PK SET
EL.=73.0

STOCKPILE OF RECLAIMED ASPHALT

APPROXIMATE LOCATION OF EXISTING WATER SERVICE

INV. 12" HDPE=64.74'
INV. 12" HDPE=66.54'
INV. 12" HDPE=63.65'
INV. 12" HDPE=67.61'
INV. 12" RCP=72.69'
INV. 12" RCP=72.73'

EDGE OF GRAVEL
OHW
W
CATE

APPROXIMATE PROPERTY LINE LOCATION (TYP.)

EDGE OF PAVEMENT SCALED FROM MASS. GIS ORTHO PHOTOS

BELMONT STREET

BRENDA AVE

EAST BRIDGEWATER ASSESSORS' MAP-LOT 83-3 TOWN OF EAST BRIDGEWATER

INSPECTOR: A. LOOMIS
WITNESSED BY: R. PHILBRICK
DATE: 11/16/2001

TP-1

0.0 '		70.0
	Ap SANDY LOAM 10 YR 3/3	
0.8 '		69.3
	B SANDY LOAM 10 YR 4/4	
1.8 '		68.2
	C_1d SANDY LOAM 2.5 Y 5/3	
8.5 '		61.5
	C_2 SANDY LOAM 2.5 Y 5/3	
12.0 '		58.0

MOTTLING AT 29"
ESHGW EL. 67.6

INSPECTOR: A. LOOMIS
WITNESSED BY: R. PHILBRICK
DATE: 11/16/2001

TP-9

0.0 '		71.0
	Ap SANDY LOAM 10 YR 3/2	
0.9 '		70.1
	B SANDY LOAM 10 YR 5/4	
1.8 '		69.2
	C_1 SANDY LOAM 2.5 Y 5/4	
3.0 '		68.0
	C_2 FINE SAND 2.5 Y 5/2	
10.0 '		61.0

MOTTLING AT 27"
ESHGW EL. 68.8

GRAPHIC SCALE
40 0 20 40 80 160
(1 IN = 40 FEET)

Revisions

Rev.	Date	By	Appr.	Description
A				
A				
A				
A				
A				
A				
A				

Horsley Witten Group, Inc.
Sustainable Environmental Solutions
www.horsleywitten.com
90 route 6A
Sandwich, MA 02563
508-833-6600 voice
508-833-3150 fax

Checked By: KAC
Drawn By: JEH
Designed By: JEH
Date: SEPTEMBER 10, 2010

Plan Set: TAUNTON RIVER WATERSHED PLAN
EAST BRIDGEWATER YOUTH SOCCER FACILITY DEMONSTRATION PROJECT
75% DESIGN PLANS

Plan Title: EXISTING CONDITIONS

Prepared For:
Town of East Bridgewater
175 Central Street
East Bridgewater, MA 02333
Phone: 1-508-378-1620
Fax: ----

Survey Provided By:
Horsley Witten Group, Inc., Inc.
90 route 6A
Sandwich, MA 02563
Phone: (508) 833-6600
Fax: (508) 833-3150
Dated: May 6 & 13, 2010

Registration:

DRAFT
NOT FOR CONSTRUCTION

Project Number: 8123
Sheet: 3 of 8

Drawing Number: CV- 3

APPROXIMATE LOCATION OF EXISTING WASTEWATER LEACHING FIELD
APPROXIMATE LEACH AREA
TP-9
200-FT RIVERFRONT AREA
APPROXIMATE LOCATION OF FUTURE SOCCER FIELDS AS SHOWN ON PMP ASSOCIATES DESIGN PLAN
CONSTRUCTED WETLAND AREA 5
APPROXIMATE LOCATION OF FUTURE SOCCER FIELDS AS SHOWN ON PMP ASSOCIATES, LLC DESIGN PLANS
25-FT WETLAND BUFFER (TYP.)
CONSTRUCTED WETLAND AREA 6
PRECAST CONCRETE BUMPER (TYP.)
HANDICAP PARKING (TYP.)
VAN ACCESSIBLE HANDICAP PARKING
ABANDONED CATCHBASIN
EXISTING 1,000 GALLON PUMP CHAMBER
EXISTING 3,500 GALLON SEPTIC TANK
EXISTING 1,000 GALLON GREASE TRAP
EXISTING BUILDING
IRR. BOX
DECK
17.0'
9.0' TYP.
12.0' TYP.
29 PARKING SPACES
PROPOSED LIMIT OF WORK (TYP.)
SOIL BORING #2 ESHGW=18" BELOW GRADE
EDGE OF GRAVEL
OHW
UP1535
UP1537
UP1538
UP1534
UP1533
UP1532
UP1531
5.0'
8.0'
100-FT WETLAND BUFFER (TYP.)
BENCHMARK SPK SET EL.=74.33
EXISTING GRAVEL TO BE REMOVED AND REPLACED WITH LOAM AND SEED (TYP.)
MATCH EXISTING PAVED APRON
GATE TO REMAIN
APPROXIMATE PROPERTY LINE LOCATION (TYP.)
EXIT (ONE-WAY)
WATER/DRAIN CROSSING
78 PARKING SPACES
22.0' TYP.
STOCKPILE OF RECLAIMED ASPHALT
APPROXIMATE LOCATION OF EXISTING WATER SERVICE
CONSTRUCTED WETLAND AREA 4
PARKING BUMPER (TYP.)
BENCHMARK STK/PK SET EL.=73.0
INV. 12" HDPE=64.74'
EXISTING WATER SERVICE TO REMAIN
FLAGPOLE
CONSTRUCTED WETLAND AREA 3
CONSTRUCTED WETLAND AREA 2
INV. 12" HDPE=66.54'
INV. 12" HDPE=63.65'
EXISTING CULVERT TO REMAIN
SOIL BORING #1 ESHGW=19" BELOW GRADE
CONSTRUCTED WETLAND AREA 1
EXISTING FENCE TO REMAIN
INV. 12" RCP=72.69'
PAVED ENTRANCE ROAD
12.0' WIDE ACCESS ROAD
5.0' GRAVEL SIDEWALK TYP.
12.0' TYP.
INV. 12" HDPE=67.61'
2.0' SHOULDER TYP.
EXISTING MAINTENANCE ACCESS TO FIELDS
23 PARKING SPACES
32 PARKING SPACES
10 PARKING SPACES
9 PARKING SPACES
END PAVEMENT/BEGIN GRAVEL
INV. 12" RCP=72.73'
ENTRANCE (ONE-WAY)
EDGE OF PAVEMENT SCALED FROM MASS GIS ORTHO PHOTOS
BELMONT STREET
BRENDA AVE
SOCCER FIELDS

EAST BRIDGEWATER ASSESSORS' MAP-LOT 83-3 TOWN OF EAST BRIDGEWATER

GRAPHIC SCALE
40 0 20 40 80 160
(1 IN = 40 FEET)

Revisions

Rev.	Date	By	Appr.	Description
A				
B				
C				
D				
E				
F				

Horsley Witten Group, Inc.
Sustainable Environmental Solutions
www.horsleywitten.com
90 route 6A
Sandwich, MA 02563
508-833-6600 voice
508-833-3150 fax

Checked By: KAC
Drawn By: JEH
Designed By: JEH
Date: SEPTEMBER 10, 2010

Plan Set: *TAUNTON RIVER WATERSHED PLAN*
EAST BRIDGEWATER YOUTH SOCCER FACILITY DEMONSTRATION PROJECT
75% DESIGN PLANS

Plan Title: *OVERALL SITE PLAN*

Prepared For:
Town of East Bridgewater
175 Central Street
East Bridgewater, MA 02333
Phone: 1-508-378-1620
Fax: ----

Survey Provided By:
Horsley Witten Group, Inc., Inc.
90 route 6A
Sandwich, MA 02563
Phone: (508) 833-6600
Fax: (508) 833-3150
Dated: May 6 & 13, 2010

Registration:
DRAFT
NOT FOR CONSTRUCTION

Project Number: 8123
Sheet: 4 of 8

Drawing Number: CV- 4

SOCCER FIELD

MAHW 6
MAHW 5
MAHW 3
MAHW 2
MAHW 1

TP-9
APPROXIMATE LEACH AREA

200-FT RIVERFRONT AREA

SEDIMENT FOREBAY (TYP.)

CONSTRUCTED WETLAND AREA 5
WATER QUALITY VOLUME=480 C.F.
(SEE DETAILED GRADING AND DRAINAGE PLAN, SHEET CV-6)

SOIL BORING #2
ESHGW=18" BELOW GRADE

CONSTRUCTED WETLAND AREA 6
WATER QUALITY VOLUME=450 C.F.
(SEE DETAILED GRADING AND DRAINAGE PLAN, SHEET CV-6)

DI-7
RIM=68.2'
12" HDPE (FES-7)=66.67

EXISTING 1,000 GALLON PUMP CHAMBER

EXISTING 3,500 GALLON SEPTIC TANK

TP-1

EXISTING 1,000 GALLON GREASE TRAP

ABANDONED CATCHBASIN

IRR. BOX

CONSTRUCTED WETLAND AREA 3
WATER QUALITY VOLUME=1,400 C.F.
(SEE DETAILED GRADING AND DRAINAGE PLAN, SHEET CV-6)

BENCHMARK
SPK SET
EL.=74.33

APPROXIMATE PROPERTY LINE LOCATION (TYP.)

SEDIMENT CONTAINMENT CONSTRUCTION EXIT DURING CONSTRUCTION (SEE DETAIL)

STOCKPILE OF RECLAIMED ASPHALT

APPROXIMATE LOCATION OF EXISTING WATER SERVICE

BENCHMARK
STK/PK SET
EL.=73.0

EXISTING CULVERT TO BE ABANDONED

CONSTRUCTED WETLAND AREA 1
WATER QUALITY VOLUME=220 C.F.
(SEE DETAILED GRADING AND DRAINAGE PLAN, SHEET CV-6)

CONSTRUCTED WETLAND AREA 3
WATER QUALITY VOLUME=380 C.F.
(SEE DETAILED GRADING AND DRAINAGE PLAN, SHEET CV-6)

CONSTRUCTED WETLAND AREA 2
WATER QUALITY VOLUME=1,400 C.F.
(SEE DETAILED GRADING AND DRAINAGE PLAN, SHEET CV-6)

SOIL BORING #1
ESHGW=19" BELOW GRADE

SILT SOCK (TYP.)

EXISTING CULVERT TO REMAIN

EXISTING CULVERT TO BE ABANDONED

SEDIMENT FOREBAY (TYP.)

±7-FT BERM TO BE REMOVED

EDGE OF PAVEMENT SCALED FROM MASS GIS ORTHO PHOTOS

BELMONT STREET

BRENDA AVE

EAST BRIDGEWATER ASSESSORS' MAP-LOT 83-3 TOWN OF EAST BRIDGEWATER

GRAPHIC SCALE
40 0 20 40 80 160
(1 IN = 40 FEET)

Revisions

Rev.	Date	By	Appr.	Description
A				
B				
C				
D				
E				
F				
G				

Horsley Witten Group, Inc.
Sustainable Environmental Solutions
www.horsleywitten.com
90 route 6A
Sandwich, MA 02563
508-833-6600 voice
508-833-3150 fax

Checked By: KAC
Drawn By: JEH
Designed By: JEH
Date: SEPTEMBER 10, 2010

Plan Set: *TAUNTON RIVER WATERSHED PLAN EAST BRIDGEWATER YOUTH SOCCER FACILITY DEMONSTRATION PROJECT 75% DESIGN PLANS*

Plan Title: *OVERALL GRADING AND DRAINAGE PLAN*

Prepared For:
Town of East Bridgewater
175 Central Street
East Bridgewater, MA 02333
Phone: 1-508-378-1620
Fax: ----

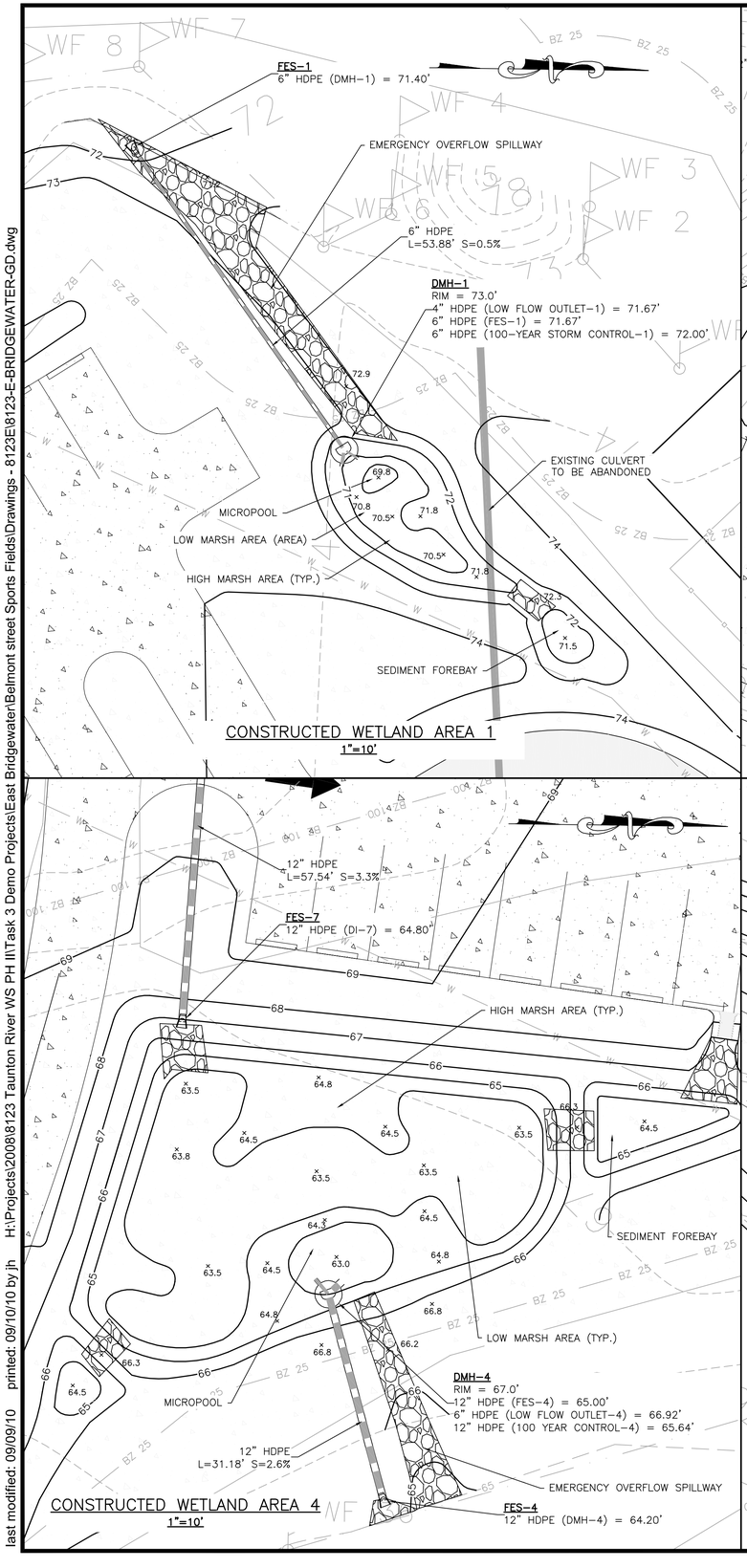
Survey Provided By:
Horsley Witten Group, Inc., Inc.
90 route 6A
Sandwich, MA 02563
Phone: (508) 833-6600
Fax: (508) 833-3150
Dated: May 6 & 13, 2010

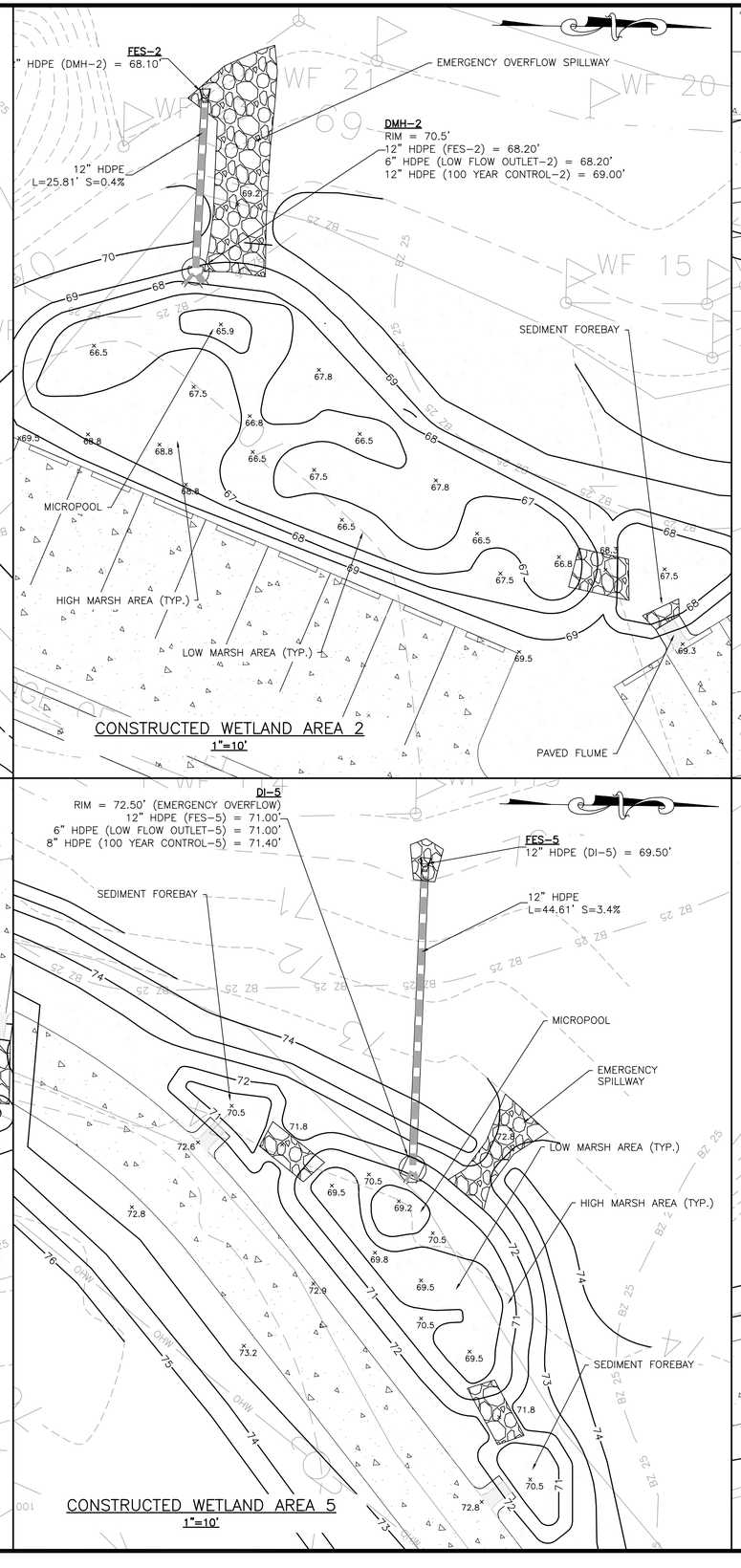
Registration:

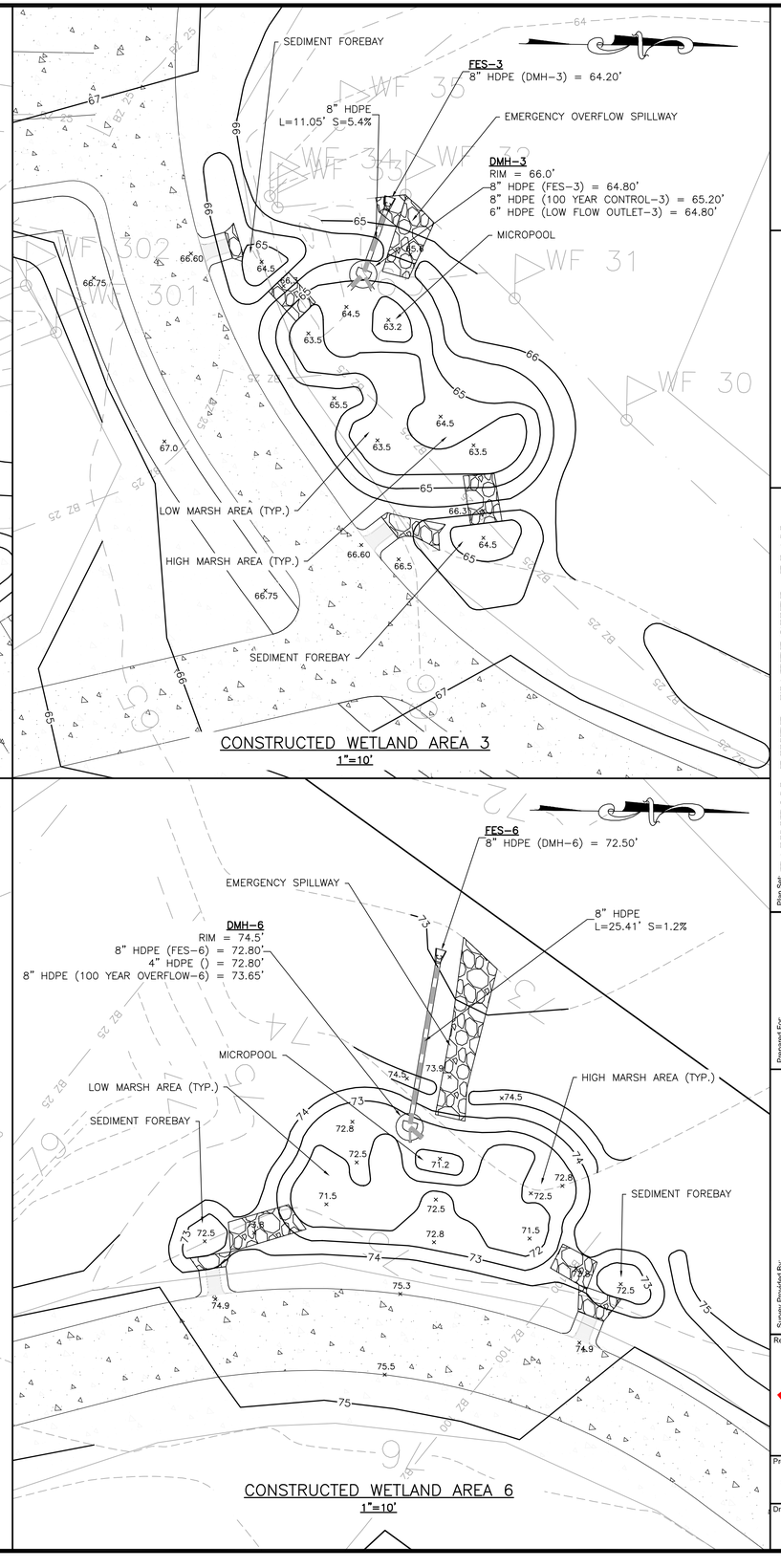
DRAFT
NOT FOR CONSTRUCTION

Project Number: 8123
Sheet: 5 of 8

Drawing Number: CV- 5







Revisions

Rev.	Date	By	Appr.	Description
A				
A				
A				
A				
A				
A				
A				

Horsley Witten Group, Inc.
Sustainable Environmental Solutions
www.horsleywitten.com
90 route 6A
Sandwich, MA 02563
508-833-6600 voice
508-833-3150 fax

Checked By: KAC
Drawn By: JEH
Designed By: JEH
Date: SEPTEMBER 10, 2010

Plan Set: *TAUNTON RIVER WATERSHED PLAN*
EAST BRIDGEWATER YOUTH SOCCER
FACILITY DEMONSTRATION PROJECT
75% DESIGN PLANS

Plan Title: *DETAILED GRADING AND DRAINAGE PLAN*

Prepared For:
Town of East Bridgewater
175 Central Street
East Bridgewater, MA 02333
Phone: 1-508-378-1620
Fax: ----

Survey Provided By:
Horsley Witten Group, Inc., Inc.
90 route 6A
Sandwich, MA 02563
Phone: (508) 833-6600
Fax: (508) 833-3150
Dated: May 6 & 12, 2010

Registration:

DRAFT
NOT FOR CONSTRUCTION

Project Number: 8123
Sheet: 6 of 8

Drawing Number: CV- 6

CONSTRUCTION SPECIFICATIONS FOR CONSTRUCTED WETLAND SYSTEMS

1. MATERIAL SPECIFICATIONS
THE ALLOWABLE MATERIALS TO BE USED IN THE CONSTRUCTED WETLAND AREA ARE DETAILED IN TABLE 1.

Table 1. Materials Specifications for Constructed Wetlands

Parameter	Specification	Size	Notes
Planting Soil Media	See Below	n/a	See Below
Subgrade Soil	Well-compacted, fine-grained, stable soil.	n/a	Native materials may be used if appropriate. USDA Soil Groups C and/or D are best.
Geomembrane Liner (See Notes)	Ultraviolet resistant, HDPE impermeable liner from Environmental Protection, Inc. or approved equal.	30MIL	Liner shall be installed per manufacturer recommendations with proper seam sealing and penetration sealing methods.
Outlet Pipe	Non-perforated PVC pipe and all associated fittings	4 inch	See detail.

2. PLANTING SOIL
THE PLANTING SOIL SHOULD BE AN APPROVED HIGH ORGANIC CONTENT MEDIUM TEXTURED LOAM OR SANDY LOAM, FREE OF STONES, STUMPS, ROOTS OR OTHER SIMILAR OBJECTS LARGER THAN TWO INCHES. NO OTHER MATERIALS OR SUBSTANCES SHOULD BE MIXED OR DUMPED WITHIN THE CONSTRUCTED WETLAND AREA THAT MAY BE HARMFUL TO PLANT GROWTH, OR PROVE A HINDRANCE TO THE PLANTING OR MAINTENANCE OPERATIONS. THE PLANTING SOIL SHOULD BE FREE OF NOXIOUS WEEDS.

THE CONSTRUCTED WETLAND SHALL UTILIZE PLANTING SOIL HAVING A COMPOSITION AS FOLLOWS:
SAND: 45–55%
SILT: 15–25%
CLAY: 5–15%
ORGANIC MATTER: 15–20%
*NOTE: ORGANIC MATTER SHALL BE WELL AGED (6–12 MONTHS), WELL AERATED, LEAF COMPOST OR APPROVED EQUIVALENT.

THE PLANTING SOIL SHALL BE TESTED AND MEET THE FOLLOWING CRITERIA:
PH RANGE: 6.5 – 8.5
ORGANIC MATTER: 15 – 20%
ELECTRICAL CONDUCTIVITY: NOT TO EXCEED 4 MMHO/CM
CATION EXCHANGE CAPACITY: >15 MEQ/100 GRAMS OF SOIL

THE PLANTING SOIL SHALL ALSO CONTAIN MAGNESIUM, PHOSPHORUS (P205), & POTASSIUM (K20) AT A STANDARD LEVEL TO FACILITATE PROPER PLANT GROWTH AS APPROVED BY THE ENGINEER OR LANDSCAPE ARCHITECT.

ALL CONSTRUCTED WETLAND AREA SHOULD HAVE A MINIMUM OF ONE TEST. EACH TEST SHOULD CONSIST OF BOTH THE STANDARD SOIL TEST FOR PH, PHOSPHORUS, AND POTASSIUM AND ADDITIONAL TESTS OF ORGANIC MATTER, ELECTRICAL CONDUCTIVITY, AND CATION EXCHANGE CAPACITY. A TEXTURAL ANALYSIS IS REQUIRED FROM THE SITE'S STOCKPILED TOPSOIL. IF TOPSOIL IS IMPORTED, THEN A TEXTURE ANALYSIS SHOULD BE PERFORMED FOR EACH LOCATION WHERE THE TOP SOIL WAS EXCAVATED.

SINCE DIFFERENT LABS CALIBRATE THEIR TESTING EQUIPMENT DIFFERENTLY, ALL TEST RESULTS SHOULD COME FROM THE SAME TESTING FACILITY. THE TESTING RESULTS SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW AND APPROVAL.

SHOULD THE PH FALL OUT OF THE ACCEPTABLE RANGE, IT MAY BE MODIFIED (HIGHER) WITH LIME OR (LOWER) WITH IRON SULFATE PLUS SULFUR.

4. FACILITY BACKFILLING
WHEN BACKFILLING THE CONSTRUCTED WETLAND, PLACE SUBGRADE SOIL IN LIFTS 12" OR GREATER. PLACE A MINIMUM OF 4" OF PLANTING SOIL ABOVE SUBGRADE SOIL FOR PROMOTING PLANT GROWTH. HEAVY EQUIPMENT CAN BE USED AROUND THE PERIMETER OF THE BASIN TO SUPPLY SOILS AND SAND. GRADE CONSTRUCTED WETLAND MATERIALS WITH LIGHT EQUIPMENT SUCH AS A COMPACT LOADER OR A DOZER/LOADER WITH MARSH TRACKS. SATURATE PLANTING SOIL AFTER PLACEMENT AND ALLOW TO SETTLE FOR AT LEAST ONE WEEK PRIOR TO INSTALLING PLANT MATERIAL.

5. PLANT INSTALLATION
ROOT STOCK OF THE PLANT MATERIAL SHOULD BE KEPT MOIST DURING TRANSPORT AND ON–SITE STORAGE. THE DIAMETER OF THE PLANTING PIT SHOULD BE AT LEAST SIX INCHES LARGER THAN THE DIAMETER OF THE PLANTING BALL. SET AND MAINTAIN THE PLANT STRAIGHT DURING THE ENTIRE PLANTING PROCESS. THOROUGHLY WATER GROUND BED COVER AFTER INSTALLATION.

TREES SHOULD BE BRACED USING 2" X 2" STAKES ONLY AS NECESSARY AND FOR THE FIRST GROWING SEASON ONLY. STAKES ARE TO BE EQUALLY SPACED ON THE OUTSIDE OF THE TREE BALL.

GRASSES AND LEGUME SEED SHOULD BE TILLED INTO THE SOIL TO A DEPTH OF AT LEAST ONE INCH. GRASS AND LEGUME PLUGS SHOULD BE PLANTED FOLLOWING THE NON–GRASS GROUND COVER PLANTING SPECIFICATIONS.

THE PLANTING SOIL SPECIFICATIONS PROVIDE ENOUGH ORGANIC MATERIAL TO ADEQUATELY SUPPLY NUTRIENTS FROM NATURAL CYCLING. THE PRIMARY FUNCTION OF THE CONSTRUCTED WETLAND IS TO IMPROVE WATER QUALITY. ADDING FERTILIZERS DEFEATS, OR AT A MINIMUM, IMPEDES THIS GOAL. ONLY ADD FERTILIZER IF COMPOST OR MULCH IS USED TO AMEND THE SOIL. ROTOTILL UREA FERTILIZER AT A RATE OF 2 POUNDS PER 1,000 SQUARE FEET.

6. MISCELLANEOUS
THE CONSTRUCTED WETLAND FACILITY MAY NOT BE CONSTRUCTED UNTIL ALL CONTRIBUTING DRAINAGE AREAS HAVE BEEN STABILIZED, AND SHALL REMAIN OFFLINE AND INOPERATIONAL UNTIL ALL VEGETATION IS STABILIZED.

CONSTRUCTED WETLAND CONSTRUCTION SEQUENCE AND REQUIRED INSPECTIONS

1. PRECONSTRUCTION MEETING.
2. INSTALLATION OF EROSION AND SEDIMENT CONTROL PRACTICES.
3. CLEAR/GRUB PROPOSED DISTURBED AREA.
4. ROUGH GRADE CONSTRUCTED WETLAND AND SEDIMENT FOREBAY AREAS DURING GENERAL SITE GRADING.
5. INSTALL INFLOW DRAINAGE SYSTEM AS SHOWN IN DETAILS (PIPE, CHANNEL, ETC).
6. EXCAVATE CONSTRUCTED WETLAND FACILITY(IES) TO WITHIN 1 FOOT OF PROPOSED GRADES.
7. GRADE AND STABILIZE ALL CONTRIBUTORY DRAINAGE AREAS TO THE CONSTRUCTED WETLAND FACILITY(IES).
8. EXCAVATE CONSTRUCTED WETLAND AREAS TO PROPOSED GRADES AND INSTALL IMPERMEABLE GEOMEMBRANE LINER AS SHOWN IN THE DETAILS.
9. INSTALL OVERFLOW OUTLET STRUCTURE PER DETAILS. PROPERLY SEAL OPENING IN IMPERMEABLE GEOMEMBRANE AROUND THE OUTLET STRUCTURE TO AVOID LEAKAGE. PERFORM A WATER TIGHTNESS TEST ACCORDING TO THE SPECIFICATIONS. **MANDATORY INSPECTION REQUIRED SEE NOTE (3) BELOW.**
10. INSTALL SILT FENCE ALONG THE CONSTRUCTED WETLAND PERIMETER TO PREVENT SEDIMENT FROM WASHING INTO THE BASINS FROM DISTURBED AREAS AROUND THE FACILITY(IES).
11. INSTALL APPROVED SUBGRADE MATERIAL AND CONSTRUCT ALL BERMS AND SPILLWAYS AS SHOWN IN THE DETAILS.
12. INSTALL PLANTING SOIL AS SHOWN IN THE DETAILS (UN–COMPACTED) – SEE PLANTING SOIL SPECIFICATIONS. **THE CONTRACTOR MUST SUBMIT A SOIL SAMPLE (1 GALLON) TO THE ENGINEER PRIOR TO SOIL DELIVERY TO THE SITE.**
13. STABILIZE ALL REMAINING DISTURBED AREAS AROUND FACILITY(IES) BY SEEDING, HYDROSEEDING AND/OR OTHER EROSION CONTROL METHODS AS OUTLINED IN THE EROSION AND SEDIMENT CONTROL PLANS AND DETAILS. **MANDATORY INSPECTION REQUIRED SEE NOTE (3) BELOW.**
14. INSTALL WETLAND PLANTS AS SHOWN IN PLANTING PLANS AND DETAILS. NO PLANTING SHOULD OCCUR BEFORE REMAINING DISTURBED AREAS AROUND THE FACILITY(IES) ARE STABILIZED. THE CONTRACTOR WILL BE REQUIRED TO REMOVE ANY SEDIMENT WHICH WASHES INTO THE CONSTRUCTED WETLAND AREA DURING THE CONSTRUCTION AND PLANTING PHASES. IF SUITABLE VEGETATIVE COVER HAS NOT BEEN ESTABLISHED ALONG THE CONSTRUCTED WETLAND SLOPES PRIOR TO PLANTING, A SILT FENCE PERIMETER SHALL BE INSTALLED AT THE TOE OF THE CONSTRUCTED WETLAND SLOPESAND REMAIN IN PLACE UNTIL VEGETATIVE COVER IS ESTABLISHED. **MANDATORY INSPECTION REQUIRED SEE NOTE (3) BELOW.**
15. INSTALL REMAINING PLANTING SOIL AROUND PLANTS AS SHOWN IN DETAILS.
16. REMOVE REMAINING EROSION AND SEDIMENT CONTROLS ONLY AFTER SURROUNDING EXPOSED SOIL ARES HAVE BEEN PROPERLY STABILIZED. **MANDATORY INSPECTION REQUIRED SEE NOTE (3) BELOW.**

NOTES:
(1.) SEE GENERAL CONSTRUCTION NOTES FOR OVERALL CONSTRUCTION SEQUENCE.
(2.) SEE GENERAL NOTES/SPECIFICATIONS/CONSTRUCTION DETAILS FOR DETAILED CONSTRUCTION REQUIREMENTS.
(3.) MANDATORY NOTIFICATION/APPROVAL OF THE PROJECT ENGINEER IS REQUIRED PRIOR TO PROCEEDING WITH NEXT STAGE. **CALL THE ENGINEER (HORSLEY WITTEN GROUP, INC.) AT 508–833–6600 PRIOR TO 12:00 NOON THE PROCEEDING DAY TO ARRANGE FOR INSPECTION.**

CONSTRUCTED WETLAND FACILITY OPERATION & MAINTENANCE:

1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROPER INSPECTION AND MAINTENANCE THE CONSTRUCTED WETLAND AND ALL ASSOCIATED APPURTENANCES UNTIL SUCH TIME THAT THE FACILITIES ARE ACCEPTED BY THE OWNER.
2. THE CONTRACTOR SHALL INSPECT AND RESTORE/CLEAN ALL FACILITIES (INLETS, OUTLETS, SPILLWAYS, BASINS, ETC.) OF SEDIMENT AND DEBRIS PRIOR TO THE OWNER'S ACCEPTANCE.
3. ALL SEDIMENT AND DEBRIS SHALL BE DISPOSED OF PROPERLY IN A PRE–APPROVED LOCATION AS APPROVED BY THE **TOWN**.
4. THE CONTRACTOR SHOULD REFER TO THE STORMWATER POLLUTION PREVENTION PLAN (SWPPP) FOR ADDITIONAL INFORMATION PERTAINING TO STORMWATER FACILITY OPERATION AND MAINTENANCE REQUIREMENTS AND SHALL MAINTAIN A WORKING COPY ON SITE AT ALL TIMES.
5. THE CONSTRUCTED WETLAND FACILITIES SHALL BE INSPECTED BY THE CONTRACTOR AFTER EVERY MAJOR RAINFALL EVENT FOR THE ENTIRE DURATION OF THE CONSTRUCTION PROJECT AND THE FIRST 3–MONTHS AFTER CONSTRUCTION TO ENSURE PROPER STABILIZATION AND CONSTRUCTION.
6. SPECIFIC ANNUAL MAINTENANCE SHALL BE AS FOLLOWS:

   A. DRAINAGE STRUCTURES (INLETS, OUTLETS, SPILLWAYS, MANHOLES, CATCHBASINS, BAR GUARDS, ETC): ALL DRAINAGE STRUCTURES WILL BE INSPECTED ANNUALLY TO MONITOR FOR PROPER OPERATION, COLLECTION OF LITTER OR TRASH, AND STRUCTURAL DETERIORATION. THE BASINS WILL BE CLEANED OF SEDIMENT (INCLUDING SUMPS) AS NECESSARY, AND REPAIRED WHEN REQUIRED.

   B. RIP–RAP SLOPE PROTECTION: RIP RAP AT THE OUTFALLS WILL BE INSPECTED ANNUALLY AND REPAIRED AS NECESSARY.

   C. SEDIMENT FOREBAY: THE SEDIMENT FOREBAY TO THE CONSTRUCTED WETLAND WILL BE INSPECTED ANNUALLY TO ENSURE PROPER FUNCTIONING. THE SEDIMENT BUILD–UP ON THE FLOOR OF THE FOREBAY WILL BE REMOVED AND PROPERLY DISPOSED OF APPROXIMATELY ONCE EVERY FIVE TO SEVEN YEARS, OR MORE OFTEN AS NECESSARY TO LIMIT SEDIMENT BUILDUP TO LESS THAN 50 PERCENT OF THE DESIGN VOLUME.

   D. ROUTINE MAINTENANCE: OTHER ROUTINE MAINTENANCE WILL INCLUDE REMOVAL OF TRASH AND LITTER FROM PAVED AND PERIMETER AREAS, AND ANNUAL STREET/PARKING LOT SWEEPING AFTER THE SPRING THAW TO AVOID EXCESSIVE ACCUMULATION OF SEDIMENT IN THE DRAINAGE SYSTEM. THE PIPES DRAINING THE PROJECT WILL BE INSPECTED ANNUALLY FOR PROPER FLOW.

   E. VEGETATION: VEGETATION WILL BE INSPECTED ANNUALLY TO ENSURE ADEQUATE PLANT GROWTH AND TO REMOVE INVASIVE SPECIES. DEAD OR DYING PLANTS WILL BE REPLACED AS NECESSARY. HARVESTING OF DEAD PLANT MATERIAL IS NOT REQUIRED,

NOTE: OPERATION AND MAINTENANCE CHECKLIST AVAILABLE UPON REQUEST

SUGGESTED PLANTINGS FOR CONSTRUCTED WETLANDS

*INDICATES NATIVE PLANTS OBSERVED AT SITE

ZONE I – DEEPWATER POOLS (LOW MARSH AREAS) (1–6 FEET DEEP PERMANENT POOL) – OPTIONAL

WILD CELERY (VALISNERIA AMERICANA)
DUCKWEED (LEMNA SP.)

ZONE II – SHALLOW WATER BENCH (HIGH MARSH AREAS) (6–12" DEEP; PLANTS PARTIALLY SUBMERGED OR EMERGENT)

BUTTONBUSH (CEPHALANTHUS OCCIDENTALIS)

ARROW–ARUM (PELTANDRA VIRGINICA)
ARROWHEAD (SAGITTARIA LATIFOLIA)
BLUE FLAG IRIS (IRIS VERSICOLOR)
THREE SQUARE BULRUSH (SCHOENOPLECTUS PUNGENS)
PICKEREL WEED (PONTEDERIA CORDATA)
WOOLGRASS (SCIRPUS CYPERINUS)

ZONE III – SHORELINE FRINGE (PLANTS REGULARLY INUNDATED)

*RED MAPLE (ACER RUBRUM)
TUPELO (NYSSA SYLVATICA)
BLACK WILLOW (SALIX NIGRA)

*ARROWWOOD (VIBURNUM DENTATUM)
*SILKY DOGWOOD (CORNUS AMOMUM)
WINTERBERRY (ILEX VERTICILLATA)

*SOFT RUSH (JUNCUS EFFUSUS)
*TUSSOCK SEDGE (CAREX STRICTA)
CARDINAL FLOWER (LOBELIA CARDINALIS)
SWITCH GRASS (PANICUM VIRGATUM)
SPOTTED JOE–PYE WEED (EUPATORIUM MACULATUM)
BONESET (EUPATORIUM PERFOLIATUM)
BLUE VERVAIN (VERBENA HASTATA)

ZONE IV – I.E., BUFFER ZONE AND BEYOND (PERIODIC TO INFREQUENT FLOODING)

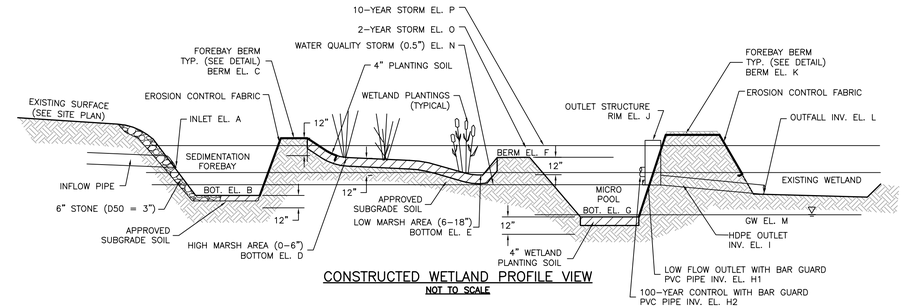
*RED MAPLE (ACER RUBRUM)
PIN OAK (QUERCUS PALUSTRIS)
EASTERN RED CEDAR (JUNIPERUS VIRGINIANA)

*NORTHERN BAYBERRY (MYRICA PENSYLVANICA)
*ARROWWOOD (VIBURNUM DENTATUM)

NEW ENGLAND ASTER (ASTER NOVAE–ANGLIAE)
SWITCH GRASS (PANICUM VIRGATUM)
BLUE VERVAIN (VERBENA HASTATA)

CONSIDER A SEED MIX FOR THIS AREA, SUCH AS "NEW ENGLAND CONSERVATION/WILDLIFE MIX" THAT HAS A VARIETY OF HERBACEOUS PLANTS, WILDFLOWERS, AND GRASSES:
(HTTP://WWW.NEWP.COM/CONS–WILD%20SPEC%20SHEET.HTML)

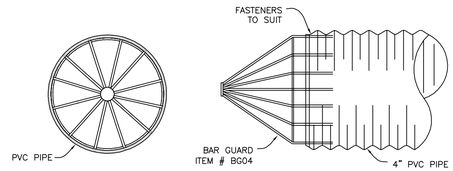
NOTE: A PLANTING PLAN WILL BE PROVIDED WITH FINAL CONSTRUCTION DOCUMENTS.



CONSTRUCTED WETLAND PROFILE VIEW
NOT TO SCALE

CONSTRUCTED WETLAND SCHEDULE:

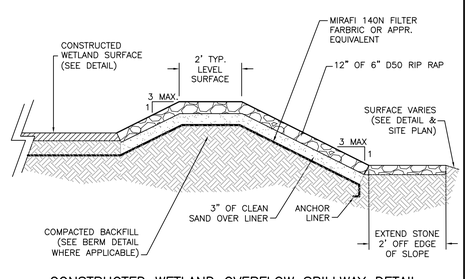
No.	Inlet Pipe Elev. A	Bottom Forebay Elev. B	Forebay Berm Elev. C	High Marsh Elev. D	Low Marsh Elev. E	Wetland Cell Berm Elev. F	Micro Pool Bottom Elev. G	Low Flow Outlet Elev. H1	100 year Control Outlet Elev. H2	Outlet Structure Pipe Elev. I	Outlet Structure Rim Elev. J	OVF Spillway Elev. K	Outfall Elev. L	Est GW Elev. M	WQ Elev. N	2 YR Storm Elev. O	10 YR Storm Elev. P	100 YR Storm Elev. Q
1	-	71.50	72.30	71.80	70.80	70.80	70.20	71.67	72.00	71.67	73.00	72.90	71.20	71.00	71.67	71.76	72.08	72.94
2	-	67.50	68.30	67.50	66.50	66.80	66.10	68.20	69.00	68.20	70.50	69.20	68.10	67.00	68.20	68.54	69.00	69.50
3	-	64.50	66.30	64.50	63.50	63.80	63.20	64.80	65.20	64.80	66.00	65.60	64.20	64.00	64.80	64.99	65.21	65.59
4	64.80	64.50	66.30	64.50	63.50	63.80	63.00	65.00	65.64	65.00	67.00	66.20	64.20	64.00	65.00	65.19	65.64	66.41
5	-	70.50	71.80	70.50	69.50	69.80	69.20	71.00	71.40	71.00	72.50	-	69.50	69.00	71.00	71.19	71.40	71.78
6	-	72.50	73.80	72.50	71.50	71.80	71.20	72.80	73.65	72.80	74.50	73.90	72.50	72.00	72.80	72.92	73.26	73.96



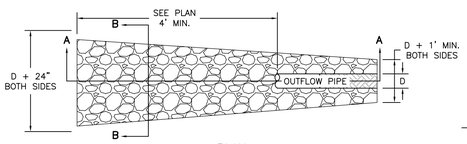
END ELEVATION — ELEVATION

NOTES:
1. MANUFACTURED BY AGRI DRAIN OR APPROVED EQUAL.
2. INSTALL PER MANUFACTURER'S SPECIFICATIONS.

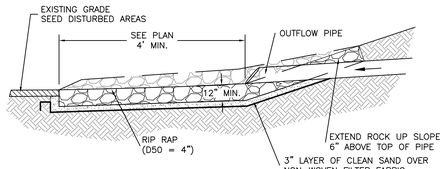
BAR GUARD
NOT TO SCALE



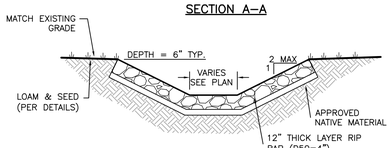
CONSTRUCTED WETLAND OVERFLOW SPILLWAY DETAIL
NOT TO SCALE



PLAN



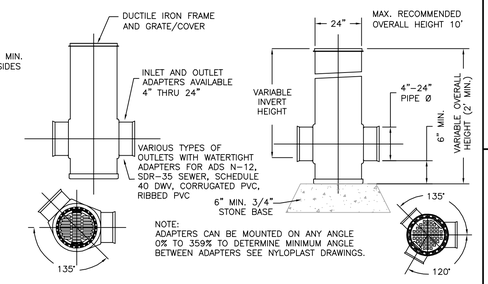
SECTION A–A



SECTION B–B

NOTES:
1. A RIP RAP OUTFALL SHALL BE CONSTRUCTED AS REQUIRED IN THE PLAN.
2. RIP RAP SHALL SURROUND THE PIPE PER THE DIMENSIONS SHOWN.
3. BACKFILL SHALL COMPLETELY COVER FILTER FABRIC.
4. FILTER FABRIC SHALL BE TOE–ED INTO THE END OF THE OUTFALL (3" MIN.).

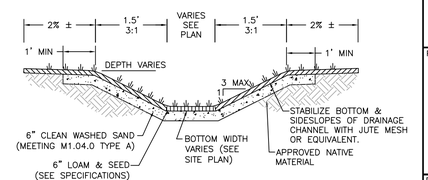
PIPE OUTFLOW DETAIL
NOT TO SCALE



NOTE:
ADAPTERS CAN BE MOUNTED ON ANY ANGLE 0% TO 359% TO DETERMINE MINIMUM ANGLE BETWEEN ADAPTERS SEE NYLOPLAST DRAWINGS.

DRAINAGE INLET DETAIL
NOT TO SCALE
BY "NYLOPLAST" OR APPROVED EQUIVALENT

NOTE:
CONTRACTOR SHALL SHAPE CHANNEL IN A PARABOLIC MANNER.



TYPICAL GRASS CHANNEL DETAIL
NOT TO SCALE

Revisions

Rev.	Date	By	Appr.	Description
A				
B				
C				
D				
E				
F				
G				
H				

Horsley Witten Group, Inc.
Sustainable Environmental Solutions
www.horsleywitten.com
90 Route 6A
Sandwich, MA 02563
508-833-6600 voice
508-833-3150 fax

Designed By: JEH
Drawn By: JEH
Checked By: RVC
Date: SEPTEMBER 10, 2010

Plan Set: TAUNTON RIVER WATERSHED PLAN
EAST BRIDGEWATER YOUTH SOCCER FACILITY DEMONSTRATION PROJECT
75% DESIGN PLANS

Plan Title: CONSTRUCTION DETAILS 1

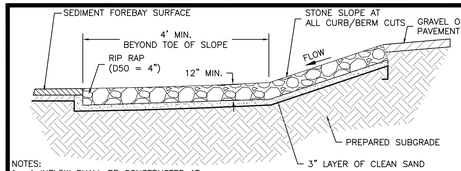
Prepared For:
Town of East Bridgewater
175 Central Street
East Bridgewater, MA 02333
Phone: 1-508-378-1620
Fax: ----

Survey Provided By:
Horsley Witten Group, Inc., Inc.
90 route 6A
Sandwich, MA 02563
Phone: (508) 833-6600
Fax: (508) 833-3150
Datcd: May 6 & 13, 2010

Registration:
DRAFT NOT FOR CONSTRUCTION

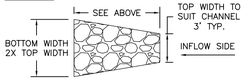
Project Number: 8123
Sheet: 7 of 8

Drawing Number: CV- 7



NOTES:
1. A INFLOW SHALL BE CONSTRUCTED AT THE END OF ALL CURB OR BERM CUTS THAT DISCHARGE INTO THE WETLAND SEDIMENT FOREBAY AREA(S).
2. SHAPE CHANNEL AS REQUIRED WITH MIN. 6" SIDESLOPE DEPTH.

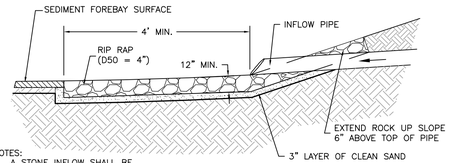
SECTION



PLAN

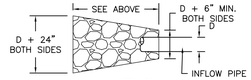
CONSTRUCTED WETLAND INFLOW DETAIL 2

NOT TO SCALE



NOTES:
1. A STONE INFLOW SHALL BE CONSTRUCTED AT THE END OF ALL DRAIN PIPES THAT DISCHARGE INTO THE WETLAND SEDIMENT FOREBAY AREA(S).
2. ROCK SHALL SURROUND THE INFLOW PIPE IN THE PER THE DIMENSIONS SHOWN.
3.

SECTION



PLAN

CONSTRUCTED WETLAND INFLOW DETAIL 1

NOT TO SCALE

NOTES:
1. FOUNDATION: WHERE THE TRENCH BOTTOM IS UNSTABLE, THE CONTRACTOR SHALL EXCAVATE TO A DEPTH REQUIRED BY THE ENGINEER AND REPLACE WITH A FOUNDATION OF CLASS I OR II MATERIAL AS DEFINED IN ASTM D2321, "STANDARD PRACTICE FOR INSTALLATION OF THERMOPLASTIC PIPE FOR SEWERS AND OTHER GRAVITY-FLOW APPLICATIONS," LATEST EDITION; AS AN ALTERNATIVE AND AT THE DISCRETION OF THE ENGINEER, THE TRENCH BOTTOM MAY BE STABILIZED USING A WOVEN GEOTEXTILE FABRIC.
2. BEDDING, HAUNCHING AND INITIAL BACKFILL: SUITABLE MATERIAL SHALL CONSIST OF CLEAN, HARD, PARTICLES OF GRAVEL MEETING THE FOLLOWING:

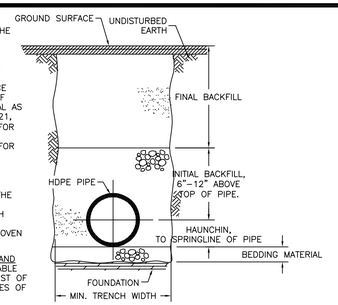
SIEVE SIZE	% PASSING
3/8"	85–95
NO. 4	5–15
NO. 8	0–2

UNLESS OTHERWISE APPROVED BY THE ENGINEER. MATERIAL SHALL BE INSTALLED AS REQUIRED IN ASTM D2321, LATEST EDITION.

UNLESS OTHERWISE SPECIFIED BY THE ENGINEER, MINIMUM BEDDING THICKNESS SHALL BE 4" (100mm) FOR 4"–24" (100–600mm) AND 42"–48"(1050–1200mm) CORRUGATED POLYETHYLENE PIPE (CPEP); 6" (150mm) FOR 30"–36" (750–900mm) CPEP.

3. UNLESS OTHERWISE SPECIFIED BY THE ENGINEER, MINIMUM TRENCH WIDTHS SHALL BE AS FOLLOWS:

NOMINAL ø in (mm)	MIN. RECOMMENDED TRENCH WIDTH, in (mm)
8 (200)	25 (630)
10 (250)	28 (710)
12 (300)	31 (790)
15 (375)	34 (860)
18 (450)	39 (990)



DETAIL PROVIDED BY ADVANCED DRAINAGE SYSTEMS, INC.

4. MINIMUM COVER: MINIMUM RECOMMENDED DEPTHS OF COVER FOR VARIOUS LIVE LOADING CONDITIONS ARE SUMMARIZED IN THE FOLLOWING TABLE. UNLESS OTHERWISE NOTED, ALL DIMENSIONS ARE TAKEN FROM THE TOP OF PIPE TO THE GROUND SURFACE.

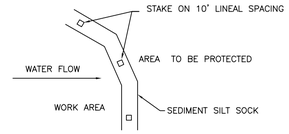
SURFACE LIVE LOADING CONDITION	MINIMUM RECOMMENDED COVER, in (mm)
H25 (FLEXIBLE PAVEMENT)	12 (300)
H25 (RIGID PAVEMENT)	12 (300)
E80 RAILWAY HEAVY CONSTRUCTION	24 (610)
	48 (1220)

* TOP OF PIPE TO BOTTOM OF BITUMINOUS PAVEMENT

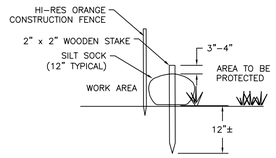
THE MINIMUM COVER FOR A HDPE PIPE IS 1'–0" FOR H–25 TRAFFIC LOADS IF INSTALLED IN ACCORDANCE WITH AASHTO SECTION 30. THIS IS BASED ON EMPIRICAL CALCULATION OF LOAD RESPONSE, MANUFACTURER'S TESTING AND FIELD EXPERIENCE WITH THE PIPE. AASHTO SPECIFICATIONS SECTION 18.4.1.5 DEFINES THE MINIMUM COVER AS "ID/8 BUT NOT LESS THAN 12 INCHES". THIS COVER IS MEASURED FROM THE PIPE OD TO THE TOP OF A RIGID (CONCRETE) PAVEMENT OR THE BOTTOM OF A FLEXIBLE (BITUMINOUS) PAVEMENT. BOTH AASHTO AND ASTM, AS WELL AS MOST MANUFACTURERS, REQUIRE ADDITIONAL (TEMPORARY COVER, MOUNDED OVER THE PIPE AND REMOVED FOR FINAL GRADING AND PAVING, IS SUFFICIENT FOR LARGE CONSTRUCTION VEHICLE LOADS.

TYPICAL DRAINAGE PIPE TRENCH DETAIL

NOT TO SCALE



PLAN VIEW



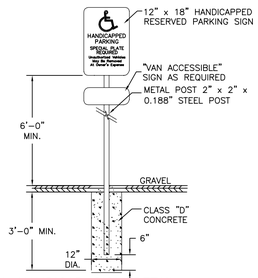
SECTION

NOTES:
1. SILT SOCK MANUFACTURER SHALL BE SILT SOXX OR ENGINEER APPROVED EQUAL.
2. ALL MATERIAL TO MEET MANUFACTURER'S SPECIFICATIONS.
3. SEDIMENT SILT SOCK TO BE FILLED WITH COMPOST AND/OR WOODY MULCH PER MANUFACTURER'S REQUIREMENTS.
4. FOLLOWING CONSTRUCTION AND SITE STABILIZATION COMPOST MATERIAL SHALL BE REMOVED OR DISPERSED ON SITE, AS APPROVED BY THE ENGINEER.

SEDIMENT SILT SOCK DETAIL

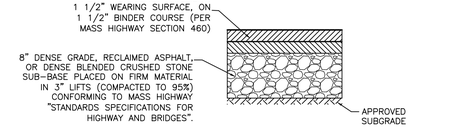
NOT TO SCALE

NOTES:
1. SIGN LAYOUT, COLORS, SYMBOL AND LETTERING SHALL BE STANDARD.
2. TO BE LOCATED ON SITE AT ALL HANDICAP SPACES AS SHOWN ON PLAN.
3. METAL POST TO BE PAINTED 2 COATS OF EXTERIOR GREEN ENAMEL OR APPROVED EQUAL.



TYPICAL HANDICAP SIGN DETAIL

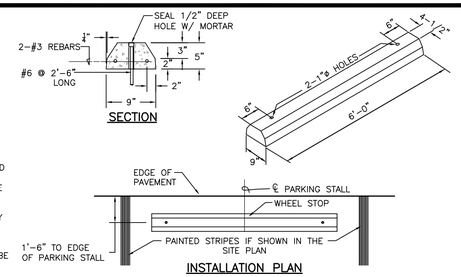
NOT TO SCALE



GENERAL NOTES:
1. SANDY–LOAM AND/OR LOAMY–SAND TOPSOIL MATERIAL SHALL BE EXCAVATED FROM ALL PAVED AREAS PRIOR TO SUB–BASE INSTALLATION.
2. SUB–GRADE (EXISTING MATERIAL) SHALL CONSIST OF INERT MATERIAL THAT IS HARD, DURABLE STONE AND/OR COURSE SAND, FREE FROM LOAM AND CLAY TO A DEPTH NOT LESS THAN 4–FT BELOW THE FINISH PAVEMENT SURFACE.
3. SUBGRADE FILL SHALL BE COMPACTED TO 95% COMPACTION UNLESS OTHERWISE DIRECTED BY THE ENGINEER.
4. SEE SITE LAYOUT PLAN FOR PAVEMENT WIDTH AND LOCATION.
5. SEE GRADING PLANS FOR PAVEMENT SLOPE AND CROSS SLOPE
6. PRIOR TO INSTALLING THE WEARING COURSE THE EXISTING BINDER COURSE SURFACE SHALL BE SWEPT COMPLETELY CLEAN BY A STREET SWEEPING MACHINE AND A TACK COAT SHALL BE INSTALLED TO A LEVEL APPROVED BY THE ENGINEER.

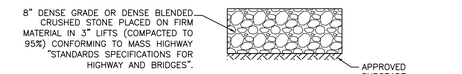
TYPICAL BITUMINOUS PAVEMENT

NOT TO SCALE



PRECAST CONCRETE BUMPER DETAIL

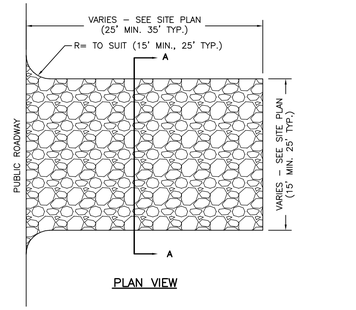
NOT TO SCALE

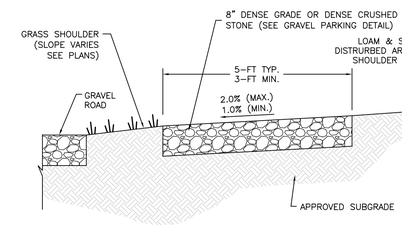


GENERAL NOTES:
1. SANDY–LOAM AND/OR LOAMY–SAND TOPSOIL MATERIAL SHALL BE EXCAVATED FROM ALL AREAS PRIOR TO GRAVEL PARKING/ROAD INSTALLATION.
2. DENSE GRADE FILL SHALL BE COMPACTED TO 95% COMPACTION UNLESS OTHERWISE DIRECTED BY THE ENGINEER.
3. SEE SITE LAYOUT PLAN FOR GRAVEL PARKING/ROAD WIDTH AND LOCATION.

TYPICAL GRAVEL PARKING DETAIL

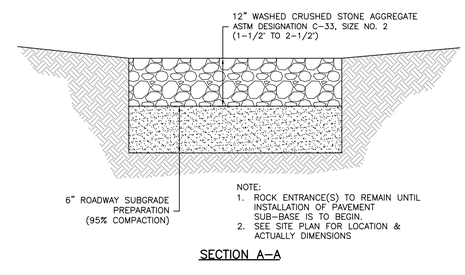
NOT TO SCALE





TYPICAL GRAVEL SIDEWALK DETAIL

NOT TO SCALE



STONE CONSTRUCTION ENTRANCE DETAIL

NOT TO SCALE

Revisions

Rev.	Date	By	Appr.	Description
1	9/10/10	JEH	RVC	Site Plan Submission

Horsley Witten Group, Inc.
Sustainable Environmental Solutions
www.horsleywitten.com
90 Route 6A
Sandwich, MA 02563
508-833-6600 voice
508-833-3150 fax

Checked By: RVC
Drawn By: JEH
Designed By: JEH
Date: SEPTEMBER 10, 2010

Plan Set: *TAUNTON RIVER WATERSHED PLAN*
EAST BRIDGEWATER YOUTH SOCCER
FACILITY DEMONSTRATION PROJECT
75% DESIGN PLANS

Plan Title: *CONSTRUCTION DETAILS 2*

Prepared For:
Town of East Bridgewater
175 Central Street
East Bridgewater, MA 02333
Phone: 1-508-378-1620
Fax: ----

Survey Provided By:
Horsley Witten Group, Inc., Inc.
90 route 6A
Sandwich, MA 02563
Phone: (508) 833-6600
Fax: (508) 833-3150
Date(s): May 6 & 13, 2010

Registration:

DRAFT
NOT FOR CONSTRUCTION

Project Number: 8123
Sheet : 8 of 8

Drawing Number: CV- 8

TAUNTON RIVER WATERSHED PLAN - YOUTH SOCCER FACILITY
E. BRIDGEWATER, MA

75% DESIGN PLANS
CONSTRUCTION COST ESTIMATE
9/1/2010

ITEM NUMBER	DESCRIPTION	ESTIMATED QUANTITY	UNIT	UNIT PRICE	TOTAL AMOUNT
1.0	MOBILIZATION/DEMOBILIZATION	1	EACH	$2,000.00	$2,000
2.0	SILT SOCK FOR EROSION CONTROL	2,650	LINEAR FOOT	$12.00	$31,800
3.0	EARTH EXCAVATION FOR SWALES	490	CUBIC YARD	$25.00	$12,250
4.0	SEDIMENT FOREBAYS	1,270	SQUARE FOOT	$12.00	$15,240
5.0	CONSTRUCTED WETLAND AREA 1	320	SQUARE FOOT	$20.00	$6,400
6.0	CONSTRUCTED WETLAND AREA 2	1,980	SQUARE FOOT	$20.00	$39,600
7.0	CONSTRUCTED WETLAND AREA 3	675	SQUARE FOOT	$20.00	$13,500
8.0	CONSTRUCTED WETLAND AREA 4	2,180	SQUARE FOOT	$20.00	$43,600
9.0	CONSTRUCTED WETLAND AREA 5	632	SQUARE FOOT	$20.00	$12,640
10.0	CONSTRUCTED WETLAND AREA 6	761	SQUARE FOOT	$20.00	$15,220
11.0	PAVED DRAINAGE FLUME	8	EACH	$600.00	$4,800
12.0	DRAINAGE INLET	7	EACH	$3,000.00	$21,000
13.0	6" HDPE DRAINAGE PIPE	42	LINEAR FOOT	$28.00	$1,176
14.0	8" HDPE DRAINAGE PIPE	34	LINEAR FOOT	$30.00	$1,020
15.0	12" HDPE DRAINAGE PIPE	166	LINEAR FOOT	$40.00	$6,640
16.0	RIP RAP SPILLWAY	6	EACH	$1,000.00	$6,000
17.0	GRAVEL PARKING - 8" DENSE GRADED CRUSHED STONE	2,010	CUBIC YARD	$50.00	$100,500
18.0	PAVED ENTRANCE ROADWAY - 1.5" BITUMINOUS CONCRETE BASE COURSE	29	TON	$90.00	$2,610
19.0	PAVED ENTRANCE ROADWAY - 1.5" CONCRETE TOP COURSE	29	TON	$90.00	$2,610
20.0	PAVED ENTRANCES ROADWAY - 6" DENSE GRADE SUBBASE	99	TON	$35.00	$3,465
21.0	REMOVE EXISTING GRAVEL	1,080	CUBIC YARD	$20.00	$21,600
22.0	PRECAST CONCRETE PARKING BUMPERS INSTALLED	192	EACH	$60.00	$11,520
23.0	HANDICAPPED PARKING SIGN	400	EACH	$4.00	$1,600
24.0	DEWATERING PROVISIONS	1	EACH	$5,000.00	$5,000
25.0	LOAM (4" THICK SPREAD)	1,080	CUBIC YARD	$35.00	$37,800
26.0	SEED (GRASS)	9,700	SQUARE YARD	$2.00	$19,400
27.0	EROSION/ SEDIMENT CONTROL	1	LUMP SUM	$7,500.00	$7,500
				SUB TOTAL	$446,491

ESTIMATED BID PRICE		**$**	**447,000**
Owner Contingency	30%	$	135,000
ESTIMATED CONSTRUCTION BUDGET		**$**	**582,000**

NOTES:

CONTINGENCY IS PROVIDED BASED ON 75% DESIGN PLANS REFLECTING THE FACT THAT UNCERTAINTY EXISTS BETWEEN THIS STAGE AND CONSTRUCTION STAGE DRAWINGS. FINAL CONSTRUCTION ESTIMATES WILL BE DEPENDANT ON FACTORS RESOLVED AT THE CONSTRUCTION BIDDING STAGE.